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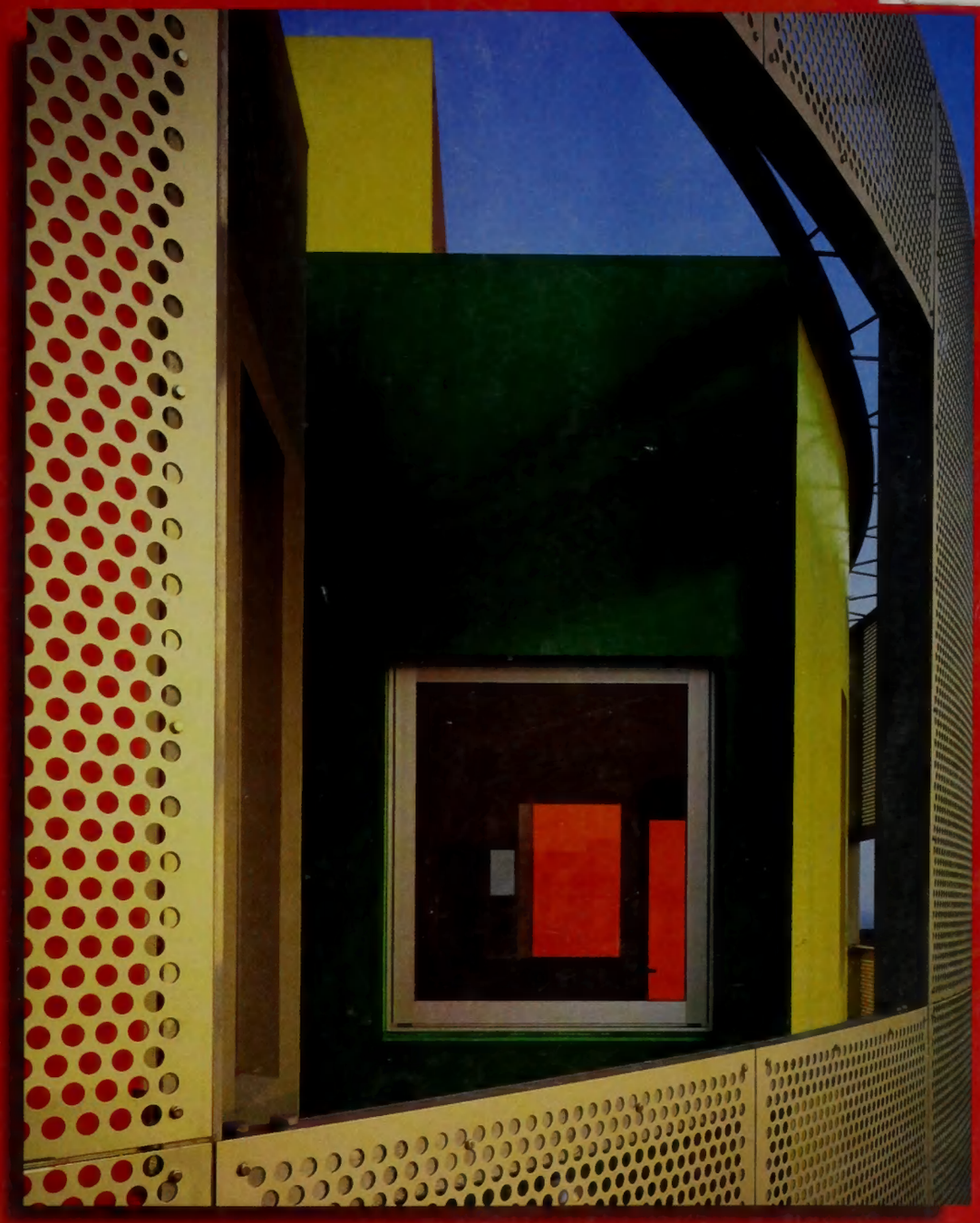
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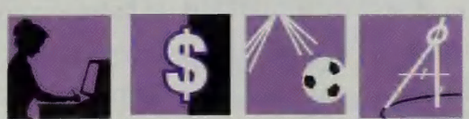
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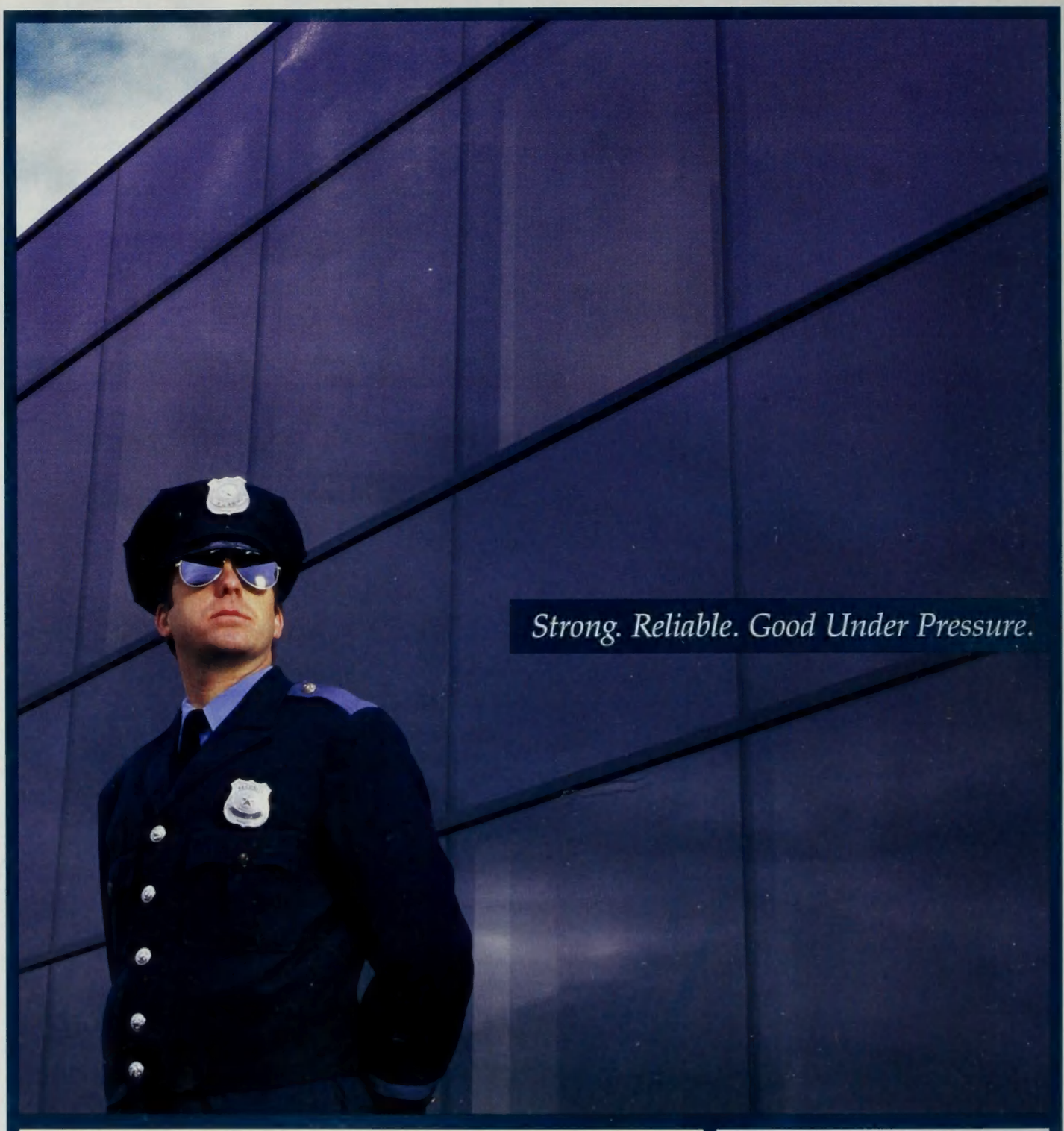
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Continuing Education: *Three AIA/ARCHITECTURAL RECORD continuing-education opportunities are offered this month: "Fundamentals of Metal Roofing" (page 161), and two stories from advertising supplements, "High Performance from Start to Finish" (page 147), and "Designing and Engineering the Future" (page 158).*

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Above: *A metal bridge connects two new wings of the Phoenix Art Museum by Tod Williams, Billie Tsien and Associates.*
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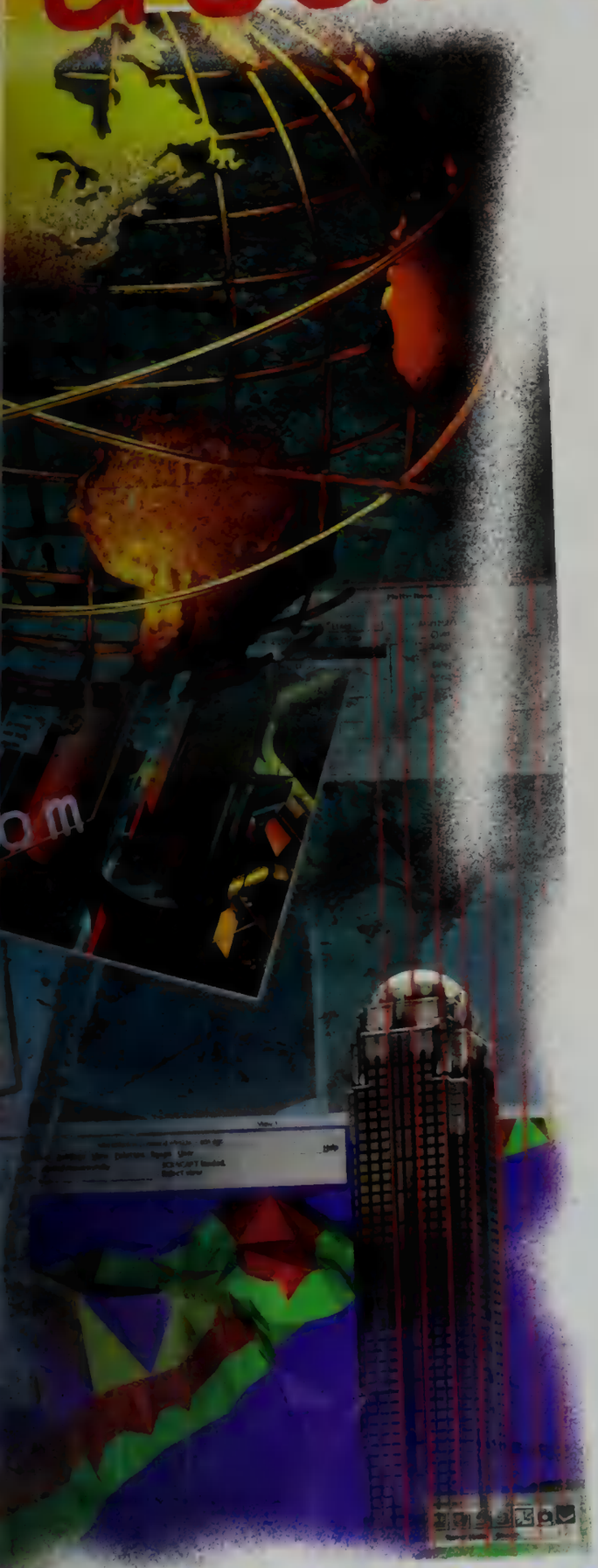
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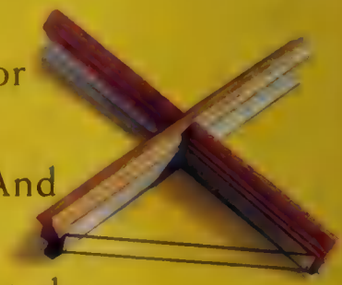
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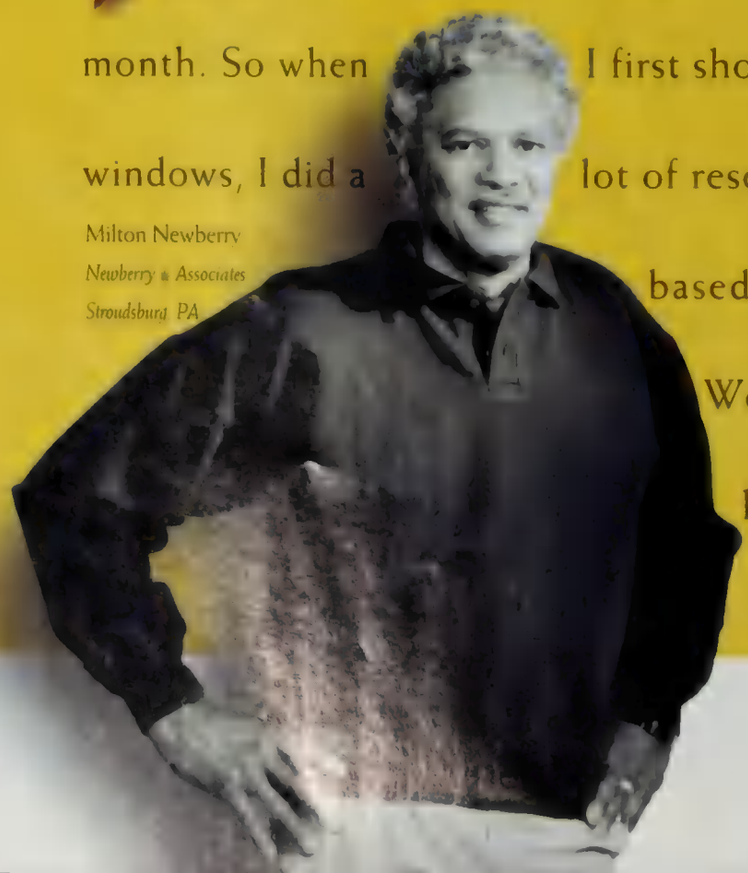
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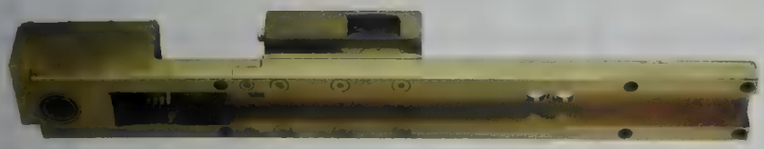
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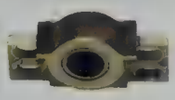
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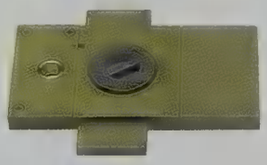
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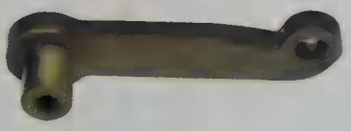
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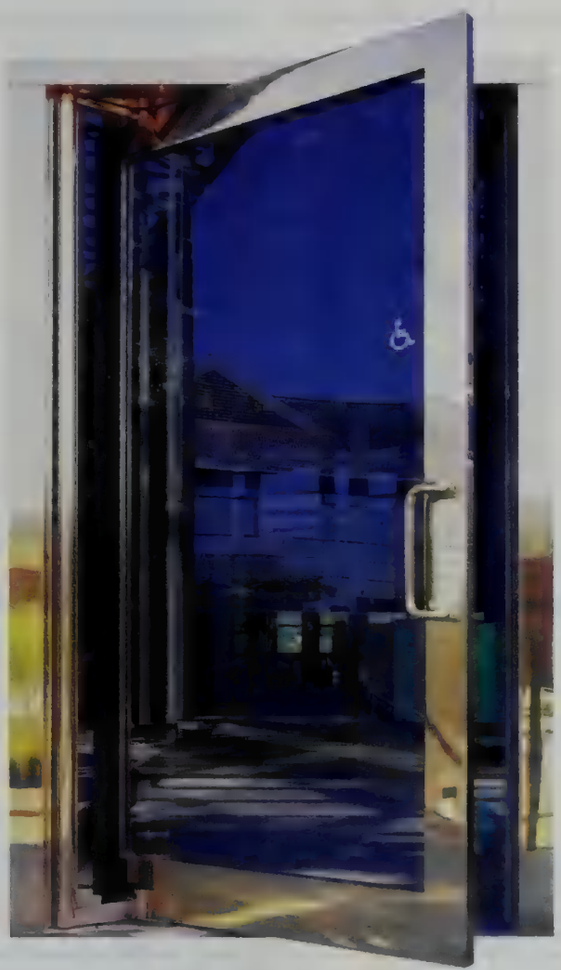
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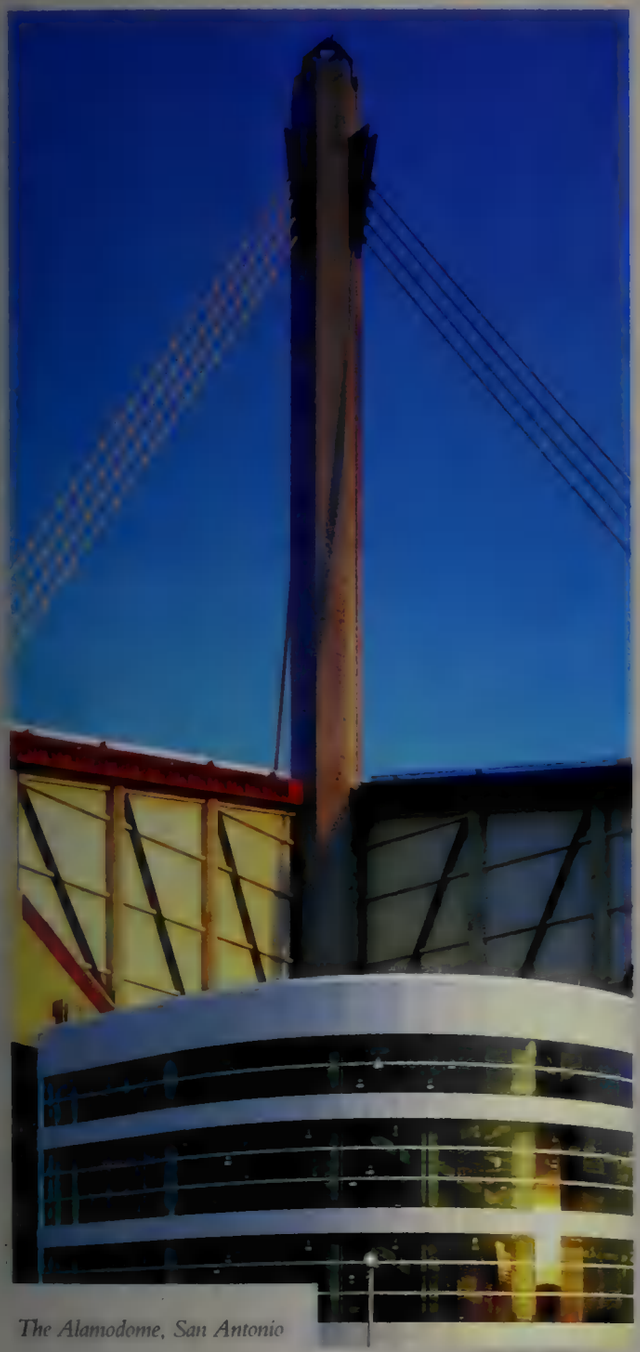
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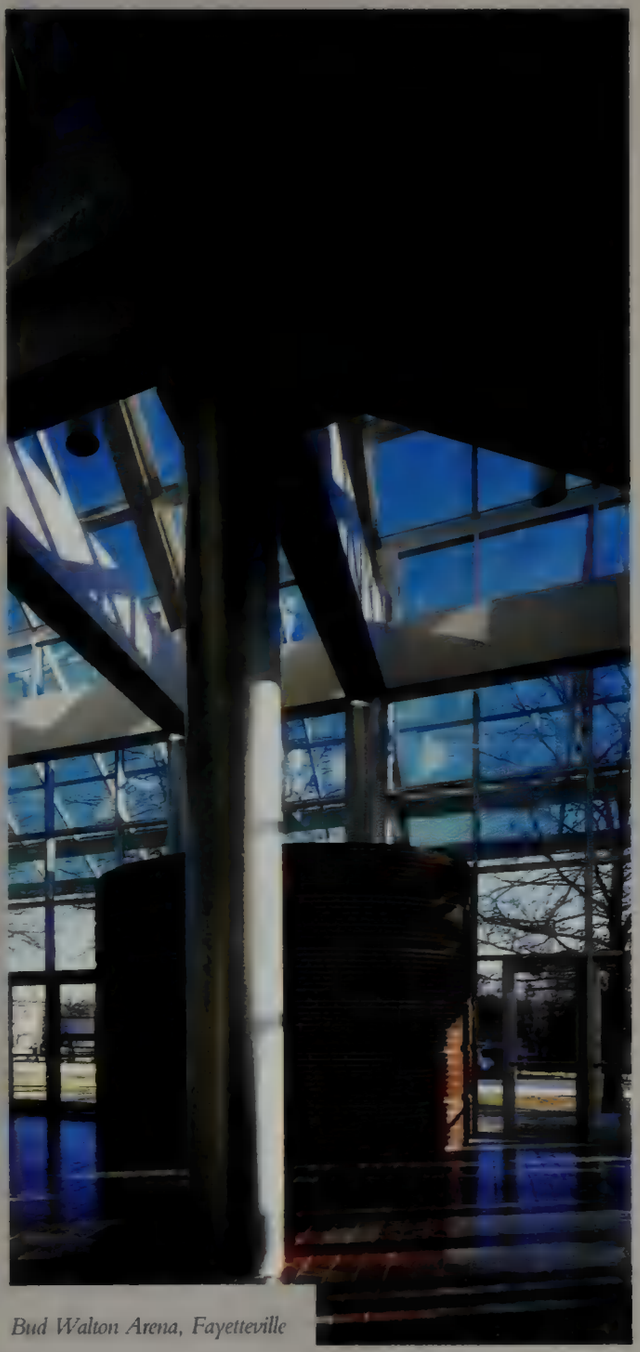
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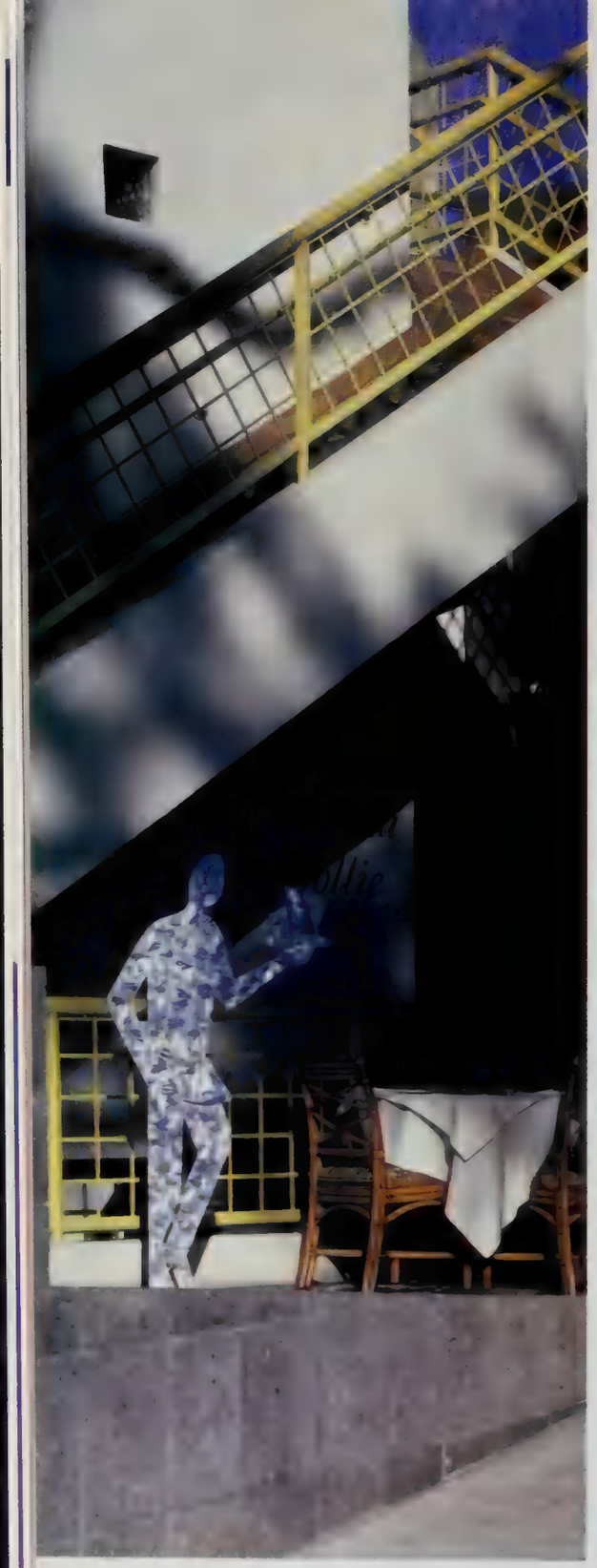
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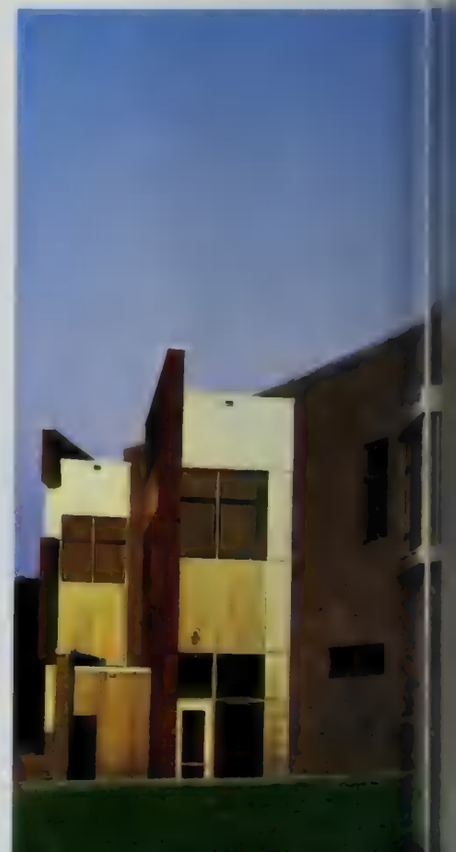
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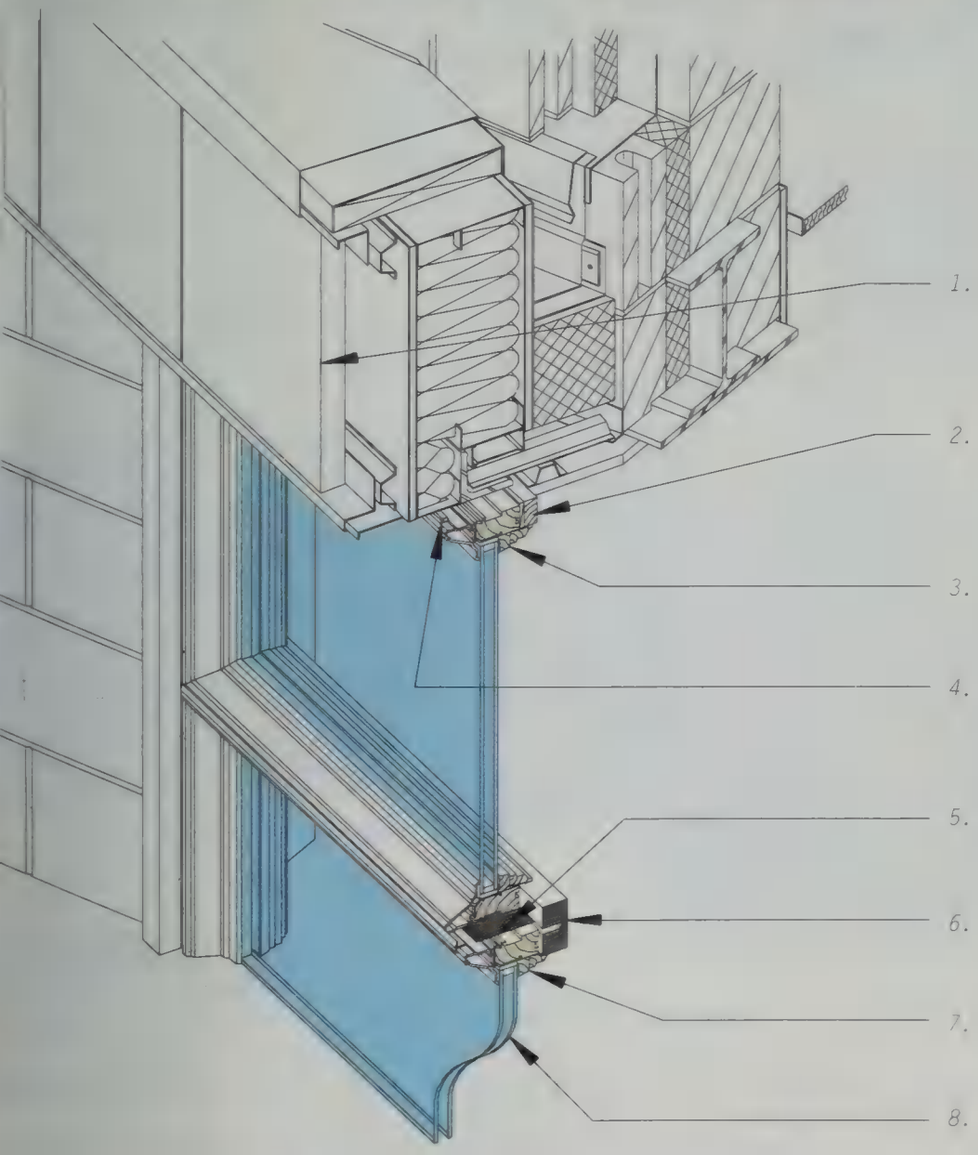
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CIRCLE 14 ON INQUIRY

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EDITORIAL:
Poised for the Millennium

— ROBERT A. IVY, FAIA

This is a dynamic moment for architecture, a profession poised for the millennium—fueled by a robust economy, enriched by a plurality of styles, challenged by new ways of doing business, informed by increasing diversity of the workforce, and brimming with information and technological advancement. Such moments of change can be confusing times, demanding a voice, a guide through the maze of contemporary architectural practice. A good magazine can clarify the paths.

Yet how can we, a two-dimensional magazine, best present architecture, a multi-dimensional discipline? How can a single journal embrace the art and science, the pragmatic and esoteric aspects of the field? The cover of this magazine, a bold red sheet, announces our commitment to change. Both a real building and the ideas that led to the building share equal weight: a photograph of architect Steven Holl's Makuhari Housing Complex rests on a page from the architect's hand-written journal. The overlay implies that architecture is a composite discipline that consists of both active process and real projects, suggesting that RECORD will present the "how" and "why" of architecture as well as "what."

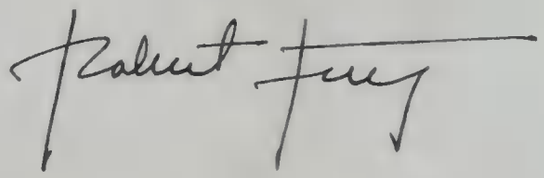
The proof of our intentions lies inside. We are devoting more pages to individual projects, offering more analytical drawings, more text, and more points of view. The stories, such as our newly instituted "Project Diary," present critical moments in the life of each project, whether in business or economics, construction, design trends, or post-occupancy.

The pages look different. Technology appears alongside social concerns; client and user voices offer counterpoint to interviews with architects. By juxtaposing information from numerous sources, busy readers can determine what to spend time with, how best to learn, and when to kick back and enjoy the ride. Real life presents such junctures, offering choices for learning or delight; so should our magazine.

We will not shrink from controversy, because the challenges facing society and the profession, from the plight of our urban centers to the challenges of the marketplace, demand leadership. You will hear writers' voices speaking with clarity and force from our pages. The best American critics, as well as international contributors, will analyze major works of architecture and take positions on substantive social issues to provoke thought and stimulate debate. Whether the writer is Robert Campbell tackling American architecture's vitality or Michael Sorkin writing about urban sprawl, ARCHITECTURAL RECORD will encourage conversation wherever architects converse—in face-to-face meetings, on-line, or in our pages. By raising important questions for the profession and the larger culture, the magazine will prove essential reading.

The number of you who read this magazine is growing. Our circulation now approaches 100,000 persons, including not only the majority of this nation's architects, but facility managers, clients, government officials, and other professionals. As of this month, all members of the American Institute of Architects will receive our magazine as a benefit of membership. We heartily welcome the 58,000 members of this distinguished professional society, though many are already regular subscribers. Their collective knowledge can inform our magazine, much as the information resources of our parent corporation, McGraw-Hill, give us access to a world of data. We are proud that the AIA chose to receive ARCHITECTURAL RECORD and pledge to all our readers, both AIA members and other subscribers, to uphold our 106-year history of editorial autonomy and integrity. The magazine's independent voice will persist as guide, mentor, and friend.

So welcome, all of you, to the new ARCHITECTURAL RECORD. In all our optimism, we offer one caveat. Other advances are in the wings. January is only the beginning of our renewal and a new, first step down the path. Join us on the journey.



Architectural Record's own journey

How did we arrive at the new RECORD? Our own path has been a deliberate journey across the nation. We held focus groups and roundtable discussions in a number of cities nation-wide, probing and listening to readers across the demographic spectrum. Your messages were clear and consistent: Speak with authority. Give us a voice. Offer more analysis. Continue to inspire us. Yet we knew that the magazine could not be all things to all people.

Once we knew what you wanted, we overlaid your desires with our own critical judgment. Our editorial vision includes key elements to appear regularly: a "dialogue" section that invites your responses and consists of letters, an interactive poll, a guest editorial ("Speak Out"), and a question-and-answer column ("AR Mentors"). Each issue will include either a project diary or critical analysis; a major article considers professional or social issues. Our signatory Building Types Study will remain, augmented by industry statistics and an introductory essay. Technology will appear in two guises—both integrated into articles about specific architectural projects and as free-standing offerings. News and continuing education expand in scale and scope. Our final page looks into the future, searching out developments that may change the way we live and work.

Some of our standard offerings were sacrosanct. Devotees of the RECORD LIGHTING supplement will find it bound into the magazine quarterly, starting in February, 1997. The magazine will expand two of our most popular issues, RECORD HOUSES (April) and RECORD INTERIORS (September), in ambition and content. Our second computer delineation award, which proved to be a popular competition, will be announced later in the year. Likewise we will include supplementary pages on international practice in Asia and Latin America. Our calendar is filling up.

Where could we obtain the accessible graphic structure, the framework for our ideas? Our goals were clear: more words, more drawings, more illustrations—all interrelated in a way that you might segue from article to graphic image to illustration. Descriptive headlines should introduce stories; the cover should allow room to announce the exciting things inside, all bound within a graphic format that was very much of our time.

After interviewing a score of graphic designers, we chose the New York firm of Carbone Smolan Associates. We admired their process, which parallels an architectural firm's own design methods. After months of consultation and late nights, we thank them, particularly Ken Carbone, Leslie Smolan (pictured below), and their project designer Jennifer Domer, with Carla Miller and Lesleigh Feldman, for breathing life into our refreshed editorial product.



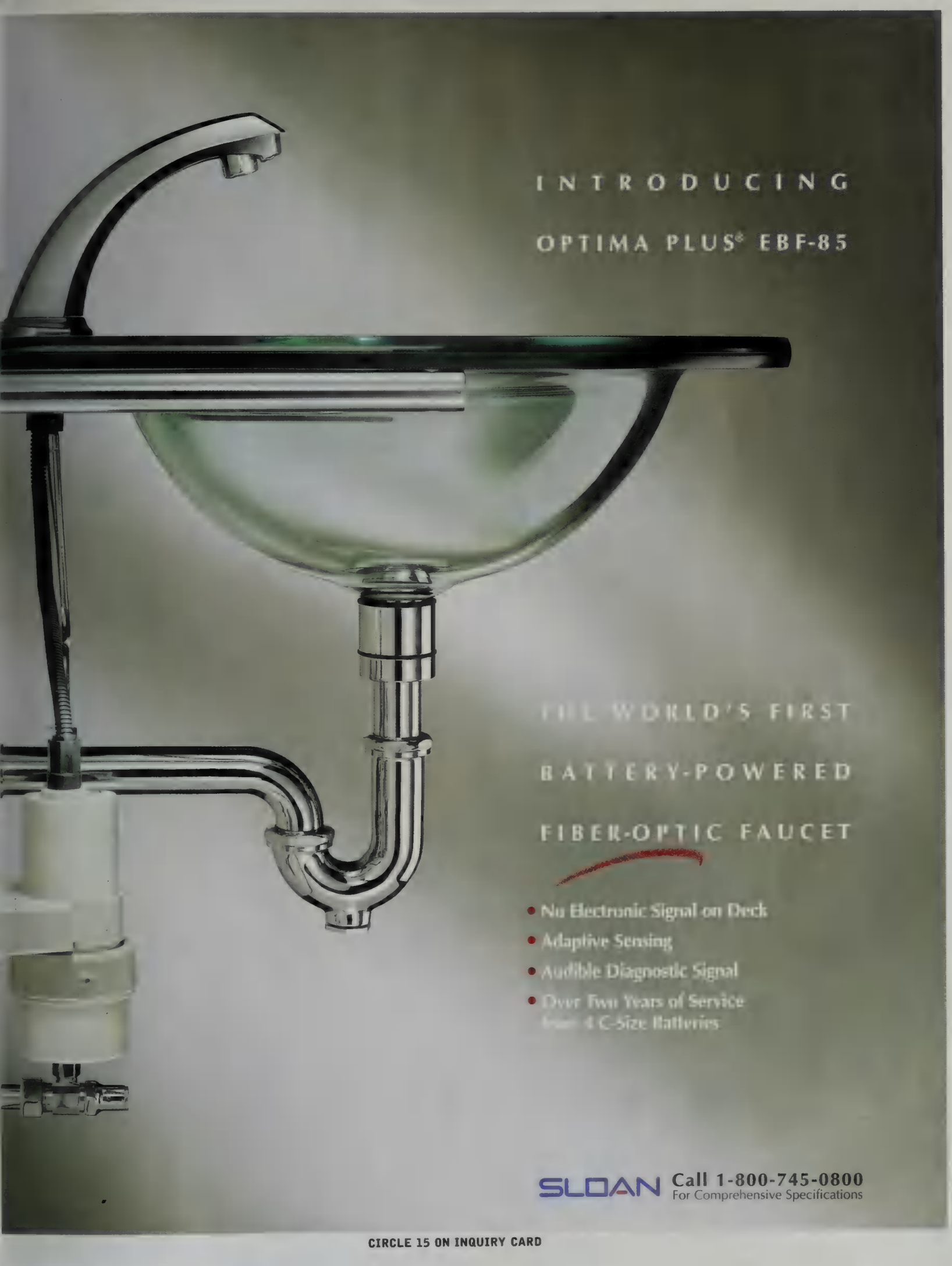
They were led through this effort by the magazine's interim editor, Malcolm Abrams. Malcolm came to ARCHITECTURAL RECORD as a consultant and brought experience, a steady hand, and an optimistic spirit as the staff moved into unfamiliar waters. Much of what you see here, the initial articles and the infectious spirit, is a product of Malcolm's hard work.

An editorial advisory board of industry leaders, both from the AIA and from the McGraw-Hill Companies, offered sound advice. Advisory board member Malcolm Frouman, the art director of Business Week magazine, deserves singular praise for guiding our graphic progress with an eagle eye. Our editorial staff met every challenge, including a radically new way of making a magazine. Check out our masthead and read their names. This hard-working, talented group pushed their limits of time and energy to ensure the quality of the magazine. They were backed up by our publisher Elaine Shusterman, who has remained steadfastly committed to transforming ARCHITECTURAL RECORD. And our advertisers have proved staunch allies, overflowing with support for our efforts.

YOUR MESSAGES WERE CLEAR AND CONSISTENT: SPEAK WITH AUTHORITY. GIVE US A VOICE. OFFER MORE ANALYSIS. CONTINUE TO INSPIRE US.

Today, we continue to plan for change. Our Web site (http://www.architecturalrecord.com) will become operational by February 1, offering timely news, a chance to publish more information and research, and ultimately, places to chat with each other. And we are planning a major new competition that should increase the visibility of architects and architecture within the business community in a significant way.

In addition to everything we have told you about the new ARCHITECTURAL RECORD, we make one further pledge: We will surprise you too. See you in February. ■



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CIRCLE 16 ON INQUIRY CARD

LETTERS



Raj Barr-Kumar, FAIA, RIBA
President, The American Institute of Architects

Architecture begins in optimism

Architects translate client needs and community aspirations into built reality. We balance costs, codes, and constructibility to create places of beauty that elevate the soul and uplift the spirit. But it is social responsibility that validates design excellence. Today's building challenges include sustainable development in harmony with nature; improving the quality of community life; providing affordable housing; and restoring economic and social vitality to our cities.

Coupled with service to community is architecture's service to the client. Today's clients seek increased design accountability and a wider array of architectural services. The architect's unique talent—the ability to define the problem, to envision the solution, to manage the creation of a quality environment—in fact today adds beauty to the client's bottom line.

The AIA is helping the architect serve client and community with renewed vigor, advocating the assertive practice of architecture: tweaking the risk/reward ratio, redefining the profession, expanding practice opportunities, and developing new contract documents and practice tools. For example, new owner-architect agreements and the general conditions of construction (B141 and A201) incorporating this stance are under development and slated for introduction in 1997.

The renewed AIA is responding to community needs with action. For example, the Legacy Project in New Orleans, a 500-person "green" shelter for the homeless conceived as pavilions in a park, is being designed and built under the leadership of AIA architects in time for dedication at the national convention.

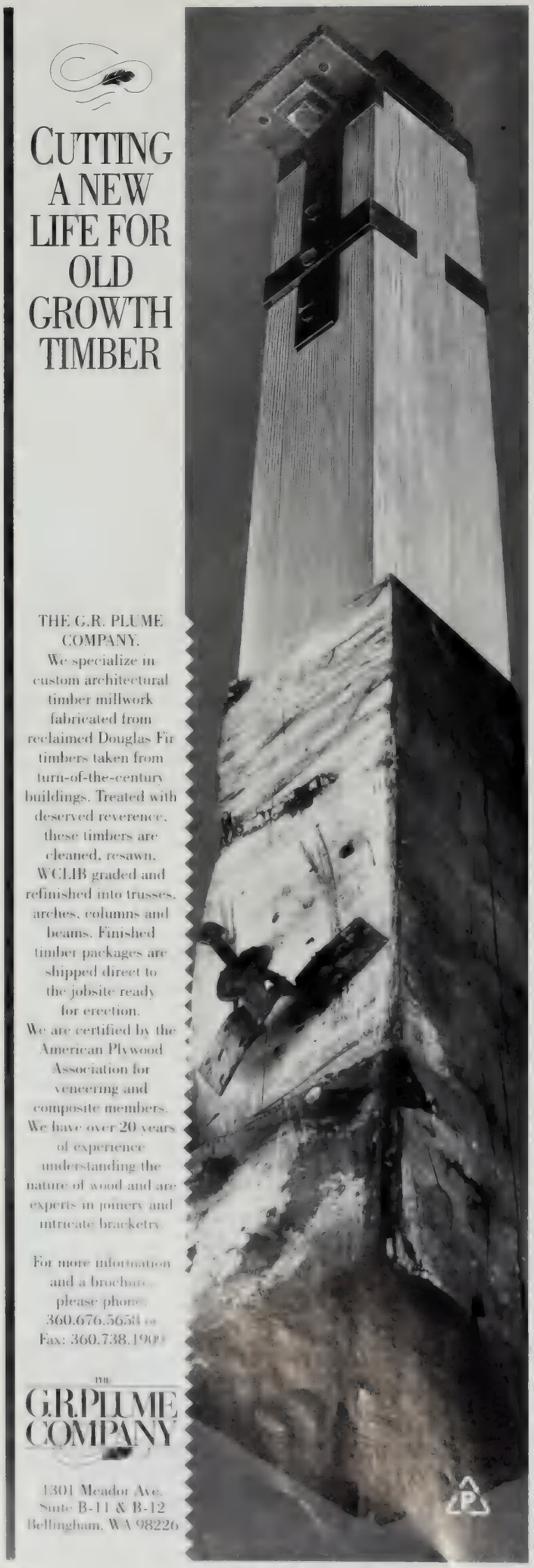
So it is with optimism that we celebrate a significant first anniversary with this issue of ARCHITECTURAL RECORD, and the beginning of a new information partner for AIA members.

Welcome to the new ARCHITECTURAL RECORD.

One year ago, The McGraw-Hill Companies and the American Institute of Architects signed a partnership agreement, effective this month, intended to strengthen the architectural profession— and support AIA members' drive to more assertive professional practice.

As architects, and AIA members in particular, broaden their services and sphere of influence in the community, the need for design, business,and practice information and continuing education grows. As architects move into more diverse work settings, becoming clients in government and corporations, specialized management information becomes more important. As the world of architecture turns global, international practice information becomes vital to U.S. architects working abroad. And as students of architecture graduate into a world of alternatives to traditional practice, they need better career management information.

With this new AIA/McGraw-Hill alliance comes access to McGraw-Hill's rich array of professional and market-data information services, plus continuing-education programs to help AIA members prosper and fulfill their obligations to create more wholesome communities wherever they work. And, starting with this issue of ARCHITECTURAL RECORD, AIA members and other architects will have a revitalized professional journal that not only serves them, but begins to expand the public percep-



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CIRCLE 17 ON INQUIRY CARD

tion about what architects do.

For more than 140 years, the AIA has served architects and the American public by actively promoting the value of architecture as vital to the quality of life in our communities. For much of that time, there has been a natural affinity between The McGraw-Hill Companies and ARCHITECTURAL RECORD and the AIA. This affinity is based in a shared vision of service to architects and society.

The AIA Board of Directors is confident that the RECORD tradition of editorial integrity and journalistic quality will continue to merit the commendation of the American Business Press, Columbia University School of Journalism, and other standard setters in the field of journalism for many more years, as it has in the past.

So, it is with optimism that we look to our future with ARCHITECTURAL RECORD. Enjoy it.

–Raj Barr-Kumar, FAIA, RIBA
President
The American Institute of Architects

More on the Boldness Gap

Editor's Note: RECORD received a score of letters in response to contributing editor Robert Campbell's article, "The Boldness Gap: Why America Is Falling Behind Other Countries [November, 1996, pages 76-79]. Several were published in December. Here are more.



Robert Campbell

I thought Robert Campbell's opinion piece was one of the most accurate summaries of the problems with architecture in the U.S. today. It was refreshing to read some of my own unfocused musings expressed in a clear, concise, and seemingly well-researched essay. The most critical point made was the quote by an architectural school dean: "Our high-school students are lazy and ill-prepared." That comment reflects on both the students entering the field and on the public who is supposed to support and debate architecture.

One question I have is whether U.S. architects are doing bold, inventive work abroad and just not here in the States. As a recent grad, well under 30, I have to agree with criticism of a system that rewards "old, safe, established firms." As vice president of AIA Students, I advocate for the younger generation.

RECORD senior editor Charles Linn once told one of our gatherings that no one under 30 produces work worthy of publication. I see a lot of very bold, inventive work going on at U.S. schools, and not just those on the East Coast. It is even easier to find informed, caring, and responsible work at Auburn, Mississippi State, Iowa State, and Minnesota, to name a few. I hope that RECORD pursues the issues Mr. Campbell raises.

–Casius Pealer
Vice president, AIAS

Charles Linn comments: The intent of what I said was that unfortunately few architects get a chance at producing buildings to publish before a certain age. We'd love to see more.

Intriguing article, "The Boldness Gap." Mr. Campbell raises some tough questions that can be debated forever. "Bold" to one may be "contrived " to another. Maybe the need to say "look at me" is an expression of cultural insecurity? Maybe American architecture is a little tired of the noise. But, then again, when was the last time a great American building really got the public's attention?

–M. Raymond, Architect
Provo, Utah

(continued on page 210)





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CIRCLE 18 ON INQUIRY CARD

SPEAK OUT: "We need a different type of internship; one that is more proactive and relevant."

— BY BOB DILLON



Bob Dillon is a writer and intern in Minneapolis. He has worked as an advocate for architecture students and interns in his capacity as the recent editor in chief of CRIT, The Journal of The American Institute of Architecture Students. He is a former member of the Board of Directors of the AIAS, and an associate member of the American Institute of Architects.

Being an intern is like being on a treadmill moving at uncomfortable and uncontrollable speeds, alternately too slow or too fast. I feel I have so many skills that are underutilized and, at the same time, so much more to learn that I'm usually frustrated by both situations.

Friends of mine have responsibilities and knowledge that I do not have, and I wonder how I got to a point where I'm lagging behind them in terms of professional development. Some other interns I know feel the same way. It seems to me we need a different type of internship; one that is more proactive and relevant. An internship redefined to include stronger mentorship.

A sense of "placelessness"

Architectural internships have been marginalized because many professionals fail to fully recognize their role in the partnership that is the Intern Development Program (IDP). Experienced architects have the ability to positively affect the future of the profession by committing time and resources to the development of interns. Part of the problem is that interns currently develop in a place that is considered neither fully academic nor fully professional; a sort of limbo where we shoulder the responsibility of implementing our own training within the guidelines of IDP, often without the help of a committed mentor. This sense of "placelessness" is perplexing; we are essentially professionals in training, limited by what we know but driven by what we know we can become. Our education and goals are no different than professional architects; we are just at an earlier point in our careers. To recognize this simple fact is to understand the connection to the future of the profession that interns and architects share.

If it's important to you that we become better equipped to handle the responsibilities inherent within the profession, we're going to need your help. There are many examples of design firms successfully developing in-house work/training programs which allow interns to realize the full potential of the IDP experience. By creating this type of academic and professional partnership, the interns, the firm, and the profession as a whole benefit. Competent interns, imbued with a sense of empowerment over their development, will only strengthen the profession by learning to work as a team. Future generations of interns, who are as committed to an employer as the employer is to them, will benefit from a profession that has learned to advocate strong mentoring and relevant internships.

Hold intern meetings

The first step toward realizing this goal is to start a dialogue with the interns in your office. Listen to their concerns and help guide them through the maze of IDP and licensing requirements. Find out where they are in the process of IDP and work with them to determine what requirements they still need to fulfill. Advise them of the opportunities available in the office and in the community that will help them realize their goals. If there are a number of interns in your office, bring them together to discuss their mutual concerns and frustrations. You'll learn what they need from you, and they will, in turn, learn from each other. This type of mentorship will go a long way toward realizing the full potential of both your professional and our IDP experiences.

The fruits of your efforts may not be seen right away, since any changes will be subtle and cumulative. Yet your commitment will ultimately mean that interns become better practitioners, more competent and knowledgeable, and with greater business savvy. In the meantime, you'll alleviate the frustration and confusion of young professionals trying to find their way in the complex world of architecture. And that, I guarantee you, will pay dividends.

Contributions: *If you would like to express your opinion in this column, send submissions: by mail (with a disk, if possible) to Speak Out, Architectural Record, 1221 Avenue of the Americas, New York, N.Y. 10020; fax 212/512-4256; or e-mail: rivy@mcgraw-hill.com. Essays must not exceed 700 words. The editors reserve the right to edit for space and clarity. Where substantial editing occurs, the author will receive final text approval.*



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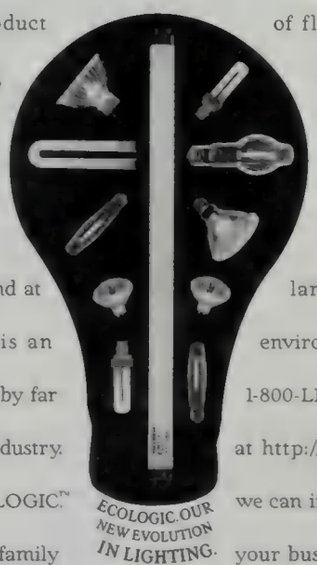
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CIRCLE 19 ON INQUIRY CARD

MENTORS: Tales of two architects—one stuck doing CAD work; the other's former employer refuses to release his work.

Kate Schwennsen, AIA, Associate Chair for Research and Extension, Department of Architecture, College of Design, Iowa State University

Samuel A. (Pete) Anderson, III, FAIA Architect for the University of Virginia, member AIA's National Ethics Council





After working hard for one architect for nearly a decade, I left because it was clear I would never be offered a full partnership. That was a year and a half ago. I work for a good firm now in my hometown. I'm still not a partner, but I was promoted to senior project manager with potential partner status. My concern is that my former employer refuses to share copies of drawings that I participated in creating. He refuses to even let me have copies of photographs which I took. Do you think I should take legal action?
– *unsigned*

Samuel A. (Pete) Anderson responds:
Unfortunately, your problem is far too common. Employers sometimes refuse to grant proper attribution to team members who actually perform the work. If your employer is a member of a professional association, he is bound by its ethical code of conduct. The AIA code of ethics would grant you proper attribution as well as access to copies of your work. If your employer is not a member of a professional association, you are left to the vagaries of the laws in your home state.

I am an architectural intern with two years experience. Since I graduated from architecture school with strong computer skills, I have spent all my time glued to a monitor doing CAD work. I know that I need to learn about construction and business, but my employer says that I am a valuable employee to the company. How can I improve my practical education?
– *An intern in New York*

Kate Schwennsen responds:
Recently, I have visited a number of offices and witnessed this newest version of the internship problem. Computer literate recent graduates are sitting behind their monitors on one side of the room, earphones on, interacting only with their screens.

Meanwhile, principals and project managers are on the other side of the room, doing business in much the same way that they have always done it. They are talking on the phone to a contractor, talking to each other over a set of drawings, writing correspondence to a client, and checking shop drawings.

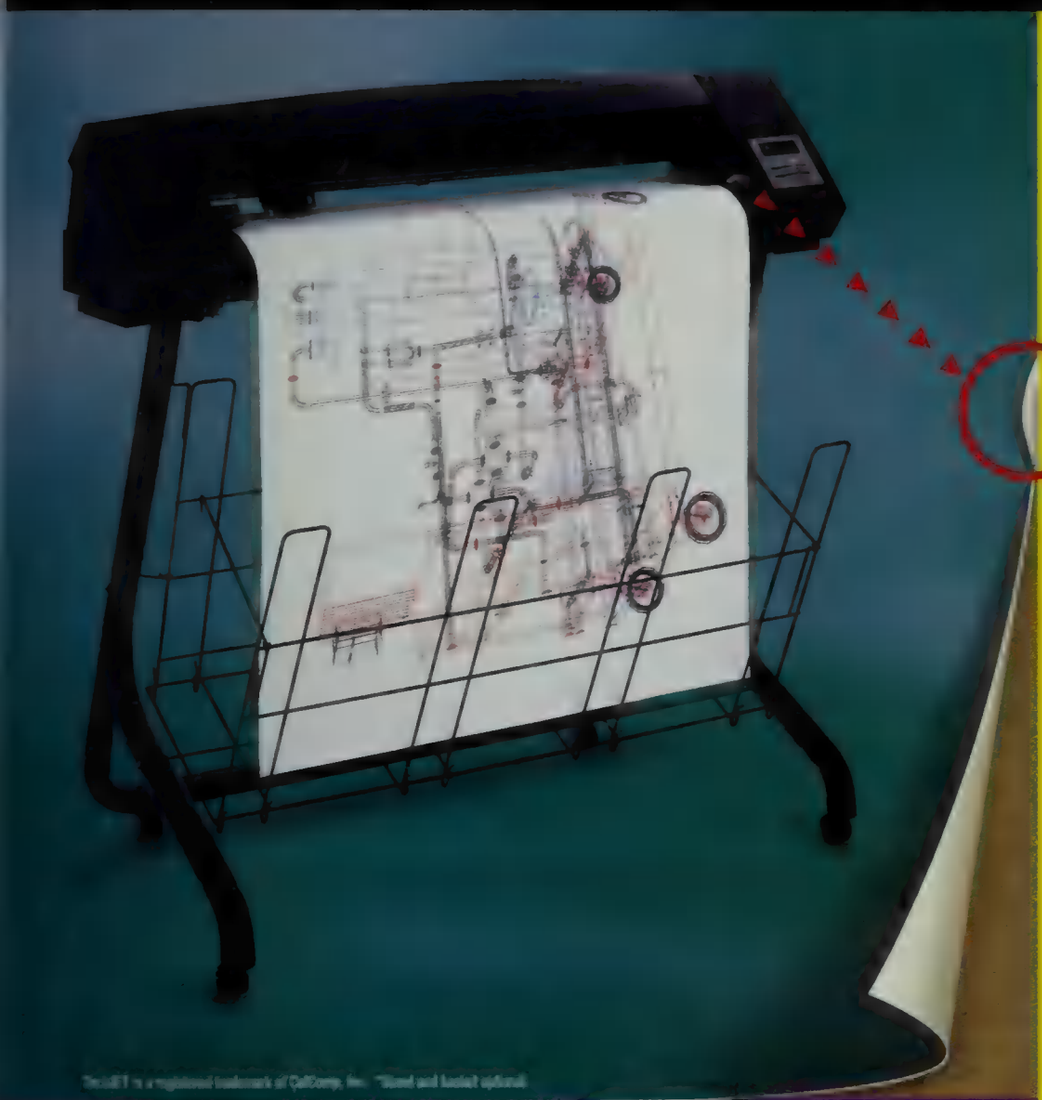
While historically interns have spent the majority of their time on construction documentation, (because it is the most labor-intensive phase of their traditional services), computer documentation has increased the separation between drafters and decision-makers. Your valuable skills often isolate you from other forms of decisionmaking. If your employer is not CAD literate, you are further isolated because the employer does not understand your "language" any more than you understand his or hers.

There are two paths you should take simultaneously. The first requires only your own initiative. If you are wearing earphones and listening to music: TAKE THEM OFF. You can learn an amazing amount by simply overhearing the conversations of project managers and others. Also, make yourself available. Volunteer for odd assignments. Let your superiors know that you are ready, willing, and able. Ask questions. Organize a group of interns in your office and other local offices to discuss common concerns. If there are common shortcomings to your internships, such as a lack of construction observation experience, ask a local architect to organize a construction visit for the entire group of interns.

The second path requires the cooperation of your employer. Speak to your employer about your desire to learn and do more. Use the Intern Development Program guidelines as a means of illustrating the minimum breadth of experience that you need. Together with your employer, devise a plan by which you can participate in management, client contact, construction observation, and contract administration. You and I and your employer all know that you need to be given the opportunity to gain new knowledge if you are to be a valuable long-term employee.

Questions: *If you have a question about your career, professional ethics, the law, or any other facet of architecture, design and construction, send submissions: by mail to Mentors, Architectural Record, 1221 Avenue of the Americas, New York, N.Y. 10020; fax 212/512-4256; or e-mail: rivy@mcgraw-hill.com. Submissions may be edited for space and clarity.*

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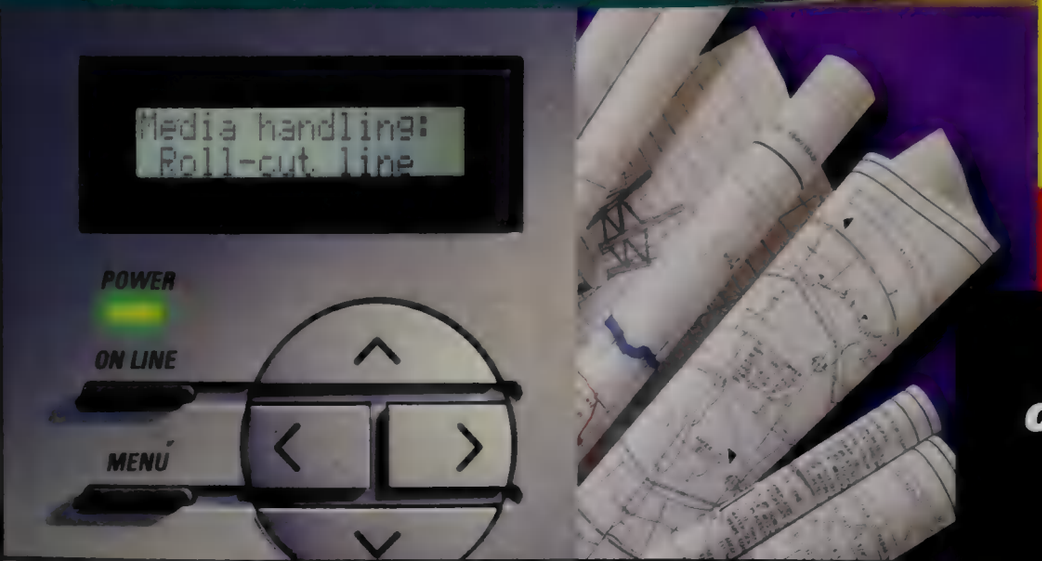


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CIRCLE 20 ON INQUIRY CARD

PULSE: Record readers were asked: Would you risk profits on a user satisfaction survey?

NO: 67% YES: 33%

No: "We've kicked this idea around in our office and talked to a few colleagues about it, and it sounds like a good idea. But our niche is mainly resorts and country clubs. We've found that people tend to expect perfection whether you're putting your fee on the line or not. If an architect offered this sort of arrangement, no one would refuse to take it. A lot of architects would do that as sort of a marketing strategy to get a leg up and say, 'This is how much I stand behind my design.'

"But the problem we've run into is that design is so subjective, that unless you have a blatantly bad design, a lot of the satisfaction-quotient is a personal thing. We think that's a huge risk for an architect to take. This forces design into being a commodity. You don't have the quality-control in building that you have, say, with manufacturing a computer. With the computer, you have a 90-day warranty.

"It's supposed to do certain things, and if it doesn't you send it back to be fixed. With architecture you have the client's program, environmental constraints, and fee constraints, and a lot of times there are really excellent reasons that a building isn't perfect. But the users really don't care or appreciate the architect's position. They just know if the building isn't perfect.

"There may be certain building types where basing the fee on a user survey would work. But when you have a complicated program, a tough budget, and several governmental agencies to deal with, I think it would be tough to get your money."

–William Kortsch, AIA
Ron Gregory and Associates,
San Diego, California

Yes: "I'd take the risk provided we had a high enough fee. I mean, if we'd cut our fee to the bone just to get the job in the first place, then I wouldn't want to take the risk. But yes, if I could cover my overhead and expenses, I would risk part of my profit to get the job."
–Thomas Walgamuth, architect,
Lafayette, Indiana

Yes: "Not only should architects be willing to risk up to a third of their profits, they should even be willing to put up 50 percent. Satisfying the end-user is the reason they were hired in the first place, as well as to use their talents to render a service and get something constructed. Granted, clients can be a pain in the neck, but the proof is in the pudding: in this case, it's how happy people are with the building. If we're only judging our work ourselves, then it's easy to say we look good.

"In both the government and the private sector, there isn't enough involvement with the community, whether it's the community of the campus or the community of the town. That's what makes me cranky—that architects don't take the community into consideration. Maybe if we put our profit on the line we would pay more attention."
–Jeffrey O'Connor,
Building designer, A/E Services,
Oklahoma State University,
Stillwater, Oklahoma

This month's question:

Can New Urbanist planning and design principles be applied successfully to inner-city public housing?

The first wave of New Urbanist developments, such as Seaside, Florida, were built on "greenfield" sites beyond the central city. A second generation of New Urbanists (and some first generation ones, as well) are now trying to apply New Urbanist principles to inner-city public housing. [See "The New Urbanists: The Second Generation" in this month's Building Types Study, pages 132–145].

Do you think New Urbanist Principles will work on public housing? ☐ Yes ☐ No

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Let us know your opinion:

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May an editor contact you for further comments? ☐ Yes ☐ No

Name _____

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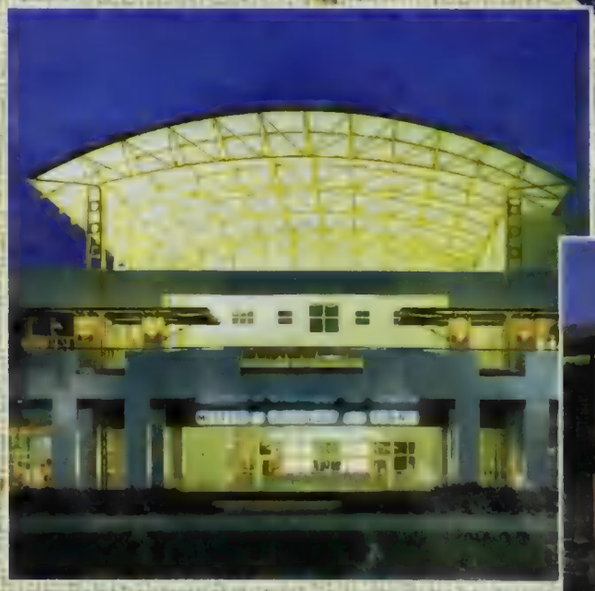
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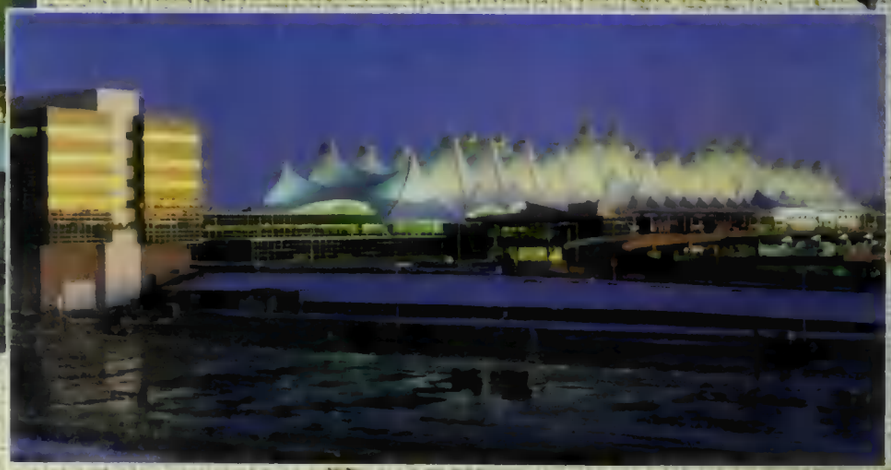
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CIRCLE 21 ON INQUIRY CARD









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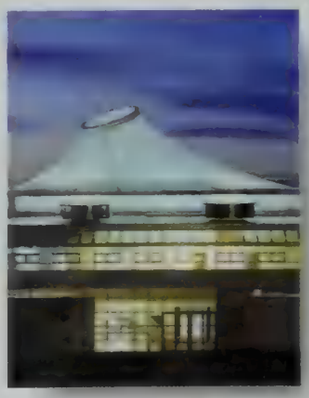
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CIRCLE 24 ON INQUIRY CARD

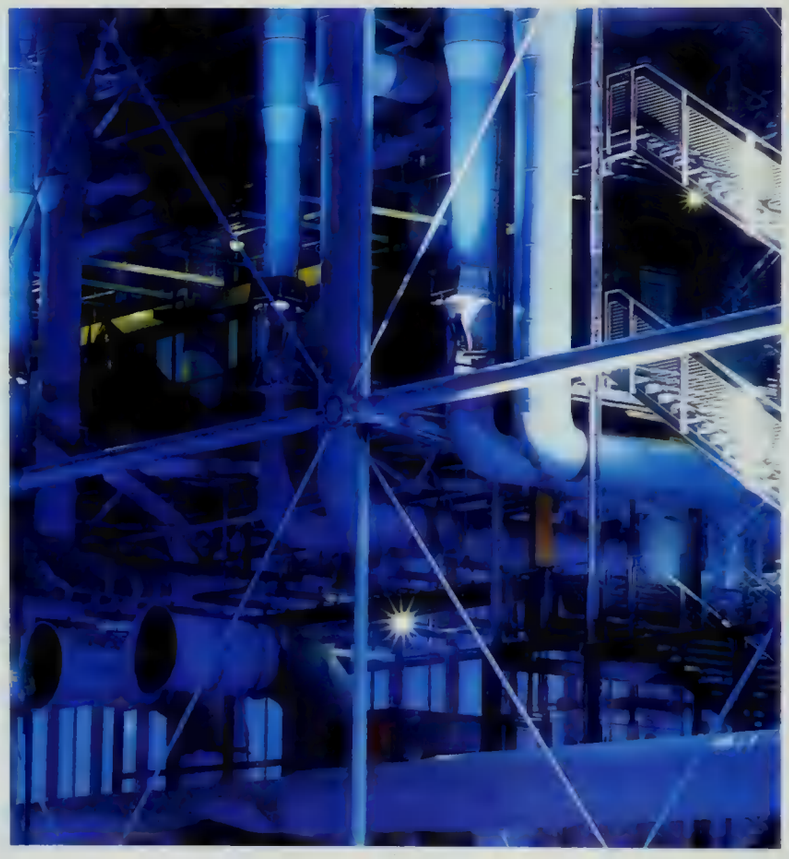
POMPIDOU CENTER RENOVATION ON FAST TRACK; WILL RE-OPEN IN 2000

A new fast-track schedule for the renovation of Paris's Georges Pompidou Center has pushed the grand reopening up from 2002 to 2000. The move was made to reduce the losses in revenue from a prolonged closing, according to a museum spokesperson. The museum will officially close for the major reconstruction beginning in the Spring of 1998. Meanwhile, the center's restored plaza and adjacent atelier Brancusi were recently unveiled, and a $30-million update of all technical systems, including fire detectors and elevators, is now underway.

The museum has suffered from general deterioration caused, in part, by overcrowding. Originally designed to receive 5,000 people daily, it has been handling 20,000.

The $88-million renovation has been split into two parts, each with its own architect. The first project, involving circulation spaces, theaters, and the large entry hall, was awarded to Renzo Piano, who has already overseen the exterior facelift. The second, which involves the museum, gallery spaces, and the library, has been awarded to Jean-Francois Bodin. A third architect, Gae Aulenti, who had previously created a controversial gallery at the museum, has been charged with working closely with Piano to assure, according to the Pompidou's new president, Jean-Jacques Aillagon, "that the building is seen as one entity."

While the museum has remained open during the early refurbishment phase, in 1998 exhibits and other programs will be held in borrowed space elsewhere in Paris, or will travel to other museums, including New York City's Guggenheim. *Claire Downey*



The Pompidou Center has been handling 20,000 people per day.

1997 IS OFF TO A GOOD START FOR AIA MEDALIST Richard Meier, FAIA, whose sleek white buildings for cultural institutions and residences are practically synonymous with *haute* Modernism, was awarded the 1997 American Institute of Architects (AIA) Gold Medal.



"It means a lot to me. Recognition by your peers is important," he told RECORD less than an hour after learning he had won the prize.

Meier had already won the Pritzker Prize in 1984 and the Royal Institute of British Architects Royal Gold Medal in 1989. He is the 54th recipient of the AIA's highest honor.

This year will be a big one for the 62-year-old architect. His long-awaited Getty Center in Los Angeles, a six-building museum and research complex on a hilltop site is scheduled to open. He also has a house in Naples, Fla., an office building in Basel, Switzerland, and a small office building in Singapore set to be completed by the end of the year or early next year.

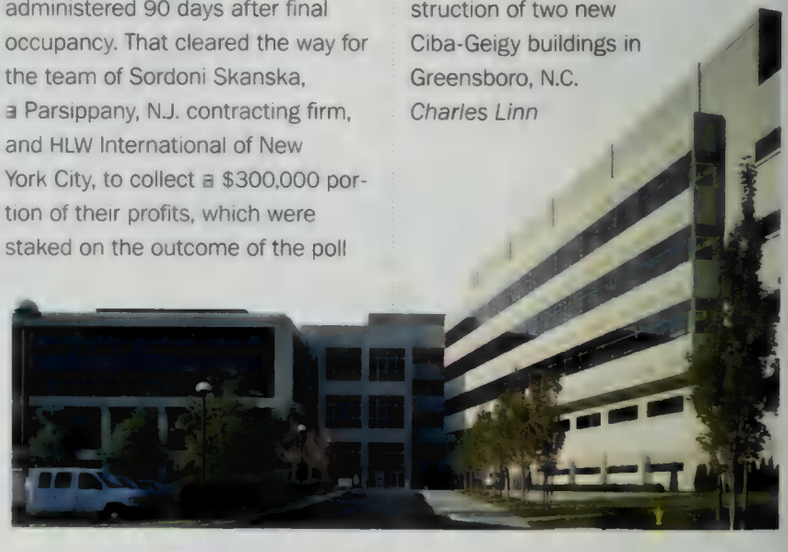
Although some people have trouble seeing how his architecture has changed over the years, Meier says his work has become much richer in terms of his use of space and materials. "The spatial complexity of the Stadthaus in Ulm, Germany [1995] or the Museum of Contemporary Art in Barcelona [1995] for example, are much greater than that of my early houses," he explained.

In recent years, many of Meier's projects have been in Europe. Although he plans to continue working abroad, he says, "I'd like to build in America now." *Cliff Pearson*

LABORATORY GETS 126 THUMBS UP; AND THE ARCHITECTS GET PAID

Two firms that gambled part of their architectural and construction profits on a user-satisfaction survey have won their bet. Eighty-four percent of the 150 employees at pharmaceutical manufacturer Ciba-Geigy's new $40-million, 165,000 sq-ft additives laboratory in Tarrytown, N.Y. gave the facility a thumbs up in a 15-question survey administered 90 days after final occupancy. That cleared the way for the team of Sordoni Skanska, a Parsippany, N.J. contracting firm, and HLW International of New York City, to collect a $300,000 portion of their profits, which were staked on the outcome of the poll [RECORD, October, 1996, page 42].

"We are very pleased," said HLW project manager Steve Oakley. In fact, HLW and Sordoni Skanska are so confident that they can beat the clock and make the budget (for which they were also rewarded), and succeed in another user survey, they have agreed to a similar arrangement for design and construction of two new Ciba-Geigy buildings in Greensboro, N.C. *Charles Linn*



HEALING GARDEN MONITORS PATIENTS BY REMOTE CONTROL

Phoenix's Good Samaritan Regional Medical Center is using herbs to heal—not by ingestion, but as part of an experimental "Healing Garden." Architect Barbara Crisp of Orcutt/Winslow Partnership, landscape architect Christine Ten Eyck, local sculptor Joe Tyler, and artist Joan Baron designed the garden to promote the connection between healing and natural landscapes. "The ability of design to capture and focus upon what we smell, hear, touch, taste and see, and how our body moves through space and interacts with it, sets a remarkable stage for healing," Crisp claimed.

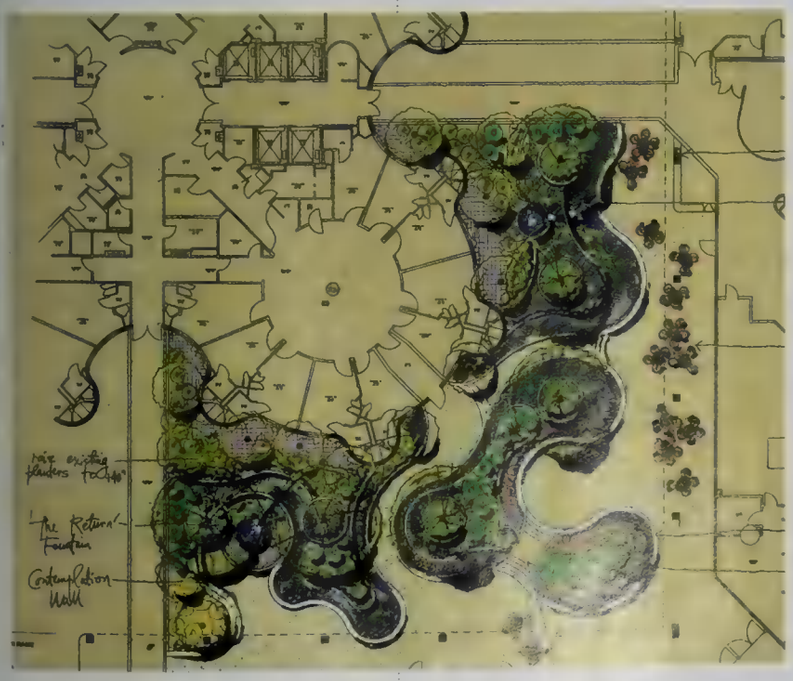
Modern technology also plays a part in the healing process, however. Telemetry patients strolling or sitting in the garden carry transmitters which send their heart rhythms to a central monitor via three discreet antennae hidden among the Palo Brea trees. The monitoring system was developed by a Good Samaritan design team headed by clinical engineer Perry Kirwan. According to Kirwan, once the primary noises in the area were determined, including television, radio, cellular phone, and electromagnetic interference from helicopters landing at a nearby pad, the antenna was designed to filter out all interference. "What we wanted to do is create a system for patients so that they can go out and enjoy the garden and be part of what the garden is supposed to be," Kirwan explained.

The garden was developed with $750,000 of donated funds.

Architect Crisp transformed a flat concrete courtyard into a landscape filled with peninsulas of planted earth which berm up against the 12-story hospital and slope gradually toward a continuous winding "seat wall." Large curved planters are elevated to make the 17 varieties of botanicals—selected to attract hummingbirds and butterflies—easy to see



and smell. Ceramic tile, glass, and seashell mosaics enliven otherwise spare, untextured concrete columns. Water flows gently throughout the garden, which also features a secluded contemplation area. *Danielle Beaugureau*



ARCHITECTURAL PRESS ROUNDUP

WOMEN ARCHITECTS: IS THEIR WORK DIFFERENT?

U.S. News & World Report, October 14, 1996 Many female architects balk at the idea that gender influences their work, according to Jill Jordan Sieder, author of the article, "A building of her own." Other women, she notes, have clear feminist agendas, from "creating affordable housing for single mothers and elderly women to ensuring that sporting arenas and civic centers have enough women's toilets." Philadelphia architect Susan Maxman has her say in the article: "Women tend to design less 'notice me, notice me,' architecture. We're less about...making a statement and more concerned with function and fitting in with the environment, the community."

TAKING THE EURO-TOILET TOUR

San Francisco Chronicle, November 26, 1996 Under the headline, "Brown Blesses S.F. Arts Chief's Euro-Toilet Tour," staff writer John King reports that Arts Commission President Stanlee Gatti is off—at his own expense—to inspect "street architecture" in Paris, London, Dresden, and Cologne. Writes King: "...if stylish street furniture doesn't seem like a top issue for a city wrestling with homelessness and inner-city crime, get used to it. As (Mayor Willie) Brown's immaculate wardrobe suggests, this is a mayor who cares deeply about surface appearances." Mayor Brown is quoted in the article explaining: "It may or may not be extra money, but it means you're trying to make the city esthetically beautiful. That means a place that citizens care more about, and take better care of."

BOMBERS OR ARCHITECTURE?

RIBA Journal, November 1996 Sometimes you have to read the foreign press to find out what your own contributing editor is thinking about. RECORD's Robert Campbell, writing in the journal of the Royal Institute of British Architects, is happy that Henry Cisneros, outgoing secretary of housing and urban development, is a believer in the "so-called" New Urbanism. "Whatever one thinks of New Urbanism, it is encouraging to see a national official thinking about settlement patterns.... The government's building agency is hiring better architects, despite the general climate." Not to get carried away, however, Campbell notes that, "none of this amounts to much in comparison with the investment in bombers. The great public monument of this era is nothing architectural: it is the military establishment."

SPREAD THE GOOD WORD, MARTHA!

Martha Stewart Living, October 1996 There's more than advice on how to set an exquisite table or make meringue tart shell boxes in Martha's magazine these days. There's now serious architecture. In her monthly column "A Letter from Martha," she dons the mantle of a latter day Ada Louise Huxtable writing "Architecture is important to all of us. We live in architecture, we work in architecture, we see architecture everywhere we look. The history of architecture is fascinating, and the women and men who create architecture are an unusual breed of artistic talent. For the most part they are designers and artists, but they must also be sculptors, engineers, sociologists, psychologists, decorators, and craftsmen versed in myriad fields such as woodworking, carpentry, metal crafting, fibers, furniture making, plumbing, electrical design, landscaping, and gardening." And business people, too, Martha! →

SHARKS IN THE DESERT AT SOUTHWEST'S FIRST AQUARIUM

The Southwest's first aquarium, a $12.7 million addition to Albuquerque Biological Park, simulates the path of a single drop of water from the headwaters of the Rio Grande River in southern Colorado down through New Mexico, finally emptying into the Gulf of Mexico. The 50,000-sq-ft aquarium, which opened Dec. 5, 1996, contains 3,000 water creatures, including 16 Sand Tiger, Brown, and Nurse Sharks.

In total, the aquarium, designed by the Albuquerque-based architect Van Gilbert of Van H. Gilbert Architect, P.C., contains six large exhibits that replicate the 1,885-mile river journey from freshwater to saltwater. Along the way, visitors can see 167 species of vertebrates and 28 species of invertebrates.

The Albuquerque Aquarium, the newest addition to the Albuquerque Biological Park (right). Walking through the 45-ft Eel Tunnel, visitors are surrounded by marine life (below).



The main viewing area of the shark exhibit boasts the largest piece of curved glazing in North America. According to Gilbert, "the concave shape allows visitors to be totally engulfed within the exhibit. It goes from floor to ceiling so it is as though you are walking on the floor of the ocean." The 20,000-pound acrylic piece, manufactured by Reynolds Polymer Tech of Grand Junction, Colo., is 40 ft long, 10 ft high, and 8 in. thick.

The 500,000 gallons of salt water required for the entire aquarium is charcoal-filtered city water that is directed through salt-water reservoirs located beneath the aquarium and recirculated with a sand filtration system. According to Pat Westbrook, the assistant director of the biological park, ozone is also used to disinfect and polish the recirculated water.

The shark enclosure itself is a 285,000 gallon, 5,000 psi silica-fume concrete tank treated with a Vandex waterproofing compound. The compound spreads throughout the capillary system of the concrete, filling microscopic air channels to ensure the tank doesn't leak. In addition, vinyl water stops were used at all construction joints.

Diners in the aquarium's San Esteban Restaurant can view the shark tank through two large windows extending along one wall. The rear wall of the tank is painted a deep blue with Sta-Crete, a heavy epoxy-based paint used to smooth and seal concrete inside the tank.

Another of the exhibits, the 45-ft-long Eel Tunnel contains 130 moray eels inside a 5 1/2-in.-thick polymer acrylic dome. A visitor passing through the tunnel is surrounded by water on three sides, providing a view of the eels, and 128



eel apartments made of concrete-based artificial rock and coral.

The $12.7 million required to build the aquarium was funded through a 1987, quarter-cent "quality of life" sales tax imposed for 10 years. More than 550,000 visitors are expected to tour the facility each year. The aquarium is one of several new additions to the 170-acre Albuquerque Biological Park, located downtown at Central and New York Avenues.

"Many of the people in New Mexico have never seen an ocean, and to see the ecological and environmental aspects of it is an incredible education tool," commented Gilbert, who served as project manager and architect for the park. *Danielle Beaugureau*

LOEWS BUILDING FIRST NEW MIAMI BEACH HOTEL IN 30 YEARS **Ground has been broken on an oceanfront complex to be built by Loews that will include the first new hotel erected in Miami Beach, Fla., in 30 years.**

Loews won the contract on the $135-million project, which also includes the complete restoration of the adjacent Art Deco, 110-room St. Moritz Hotel, by beating out six competitors, including Ross Perot, Hyatt, and Peabody Hotels. According to William Cary, historic preservation coordinator for the City of Miami Beach, Loews's plans "paid the most respect to the historic district and retained more of the original St. Moritz than any of the other projects proposed."

The Loews architects, Nichols, Brosch, Sandoval & Associates, working with Bernard Zyscovich, a historic preservation architect, have already removed the hotel's exterior facades and ornamentals added in the 1960s, and preserved the original front desk, terrazzo floors, and wrought-iron staircase.

The new 16-story tower will include 650 rooms, four restaurants and lounges, a 4,500-sq-ft fitness center and 90,000-sq-ft of meeting space. The complex, about three blocks from the Miami Beach Convention Center, will add luxury room inventory to a popular convention destination that hasn't been able to accommodate large groups within walking distance of the convention facility. →




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28 FIRMS WIN 1997 AIA HONOR AWARDS

The American Institute of Architects selected 28 projects from among 500 submissions to be recipients of its 1997 Honor Awards.

Commenting on the winners, the jury chair for architecture Malcolm Holzman, FAIA, a principal with the firm of Hardy Holzman Pfeiffer, said, "The selected projects take many forms which interpret and test the requirements of locale, budget, and owners needs. The wide variety of submissions proves there is nothing absolute in architecture today."

The 28, by category, follow:

Interior Awards

Root Residence, Armband Beach, Fla., *Pasonella + Klein, Stolzman + Berg Architects, P.C., New York City*

Bow Truss Studios/Game Show Network, Culver City, Calif., *Steven Ehrlich Architects, Santa Monica, Calif.*

Bottega Veneta, Boston, *François de Menil, New York City*

Tokyo International Forum, Tokyo *Rafael Viñoly Architects, P.C., New York City*

The Henri Beaufour Institute, USA, Washington, D.C., *Williams & Dynerman Architects, Washington, D.C.*

New Victory Theater, New York City, *Hardy Holzman Pfeiffer Associates, New York City*

Dillingham Hall at the Punahou School, Honolulu, *Hardy Holzman Pfeiffer Associates, New York City*

Meyocks and Priebe Advertising, West Des Moines, Iowa, *Herbert Lewis Kruse Blunch Architecture, Des Moines, Iowa*

Praxair Distribution, Ankeny, Iowa, *Herbert Lewis Kruse Blunck Architecture, Des Moines, Iowa*

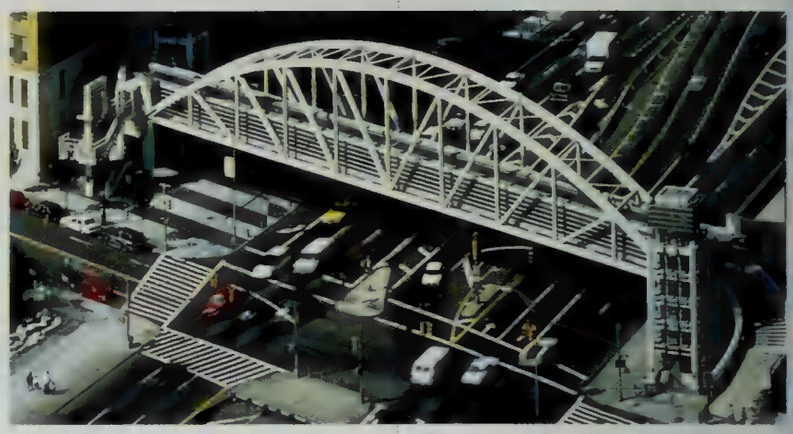
Delano Hotel, Miami Beach, Fla., *PMG Architects, New York City*



Architecture

Memorial Hall, Harvard University, Cambridge, Mass. *Venturi, Scott Brown and Associates, Inc., Philadelphia, Pa.*

Manville Hall, Berkeley, Calif. *David Baker Associates Architects,* San Francisco, Calif.



Tribeca Bridge by Skidmore, Owings & Merrill LP (above). Delano Hotel by PMG Architects (left). Neurosciences Institute by Tod Williams Billie Tsien Associates (below).

Schulman Residence, Brentwood, Calif., *Steven Ehrlich Architects, Santa Monica, Calif.*

The Neurosciences Institute, San Diego, Calif., *Tod Williams Billie Tsien Associates, New York City*

Lasater Residence, San Antonio, Tex., *Lake/Flato Architects, San Antonio, Tex.*

Laureola Oaks, San Carlos, Calif., *Seidel/Holzman, San Francisco, Calif.*

Delta & Pinelands Company Guesthouse, Scott, Miss., *Walter Chatnam, New York City*

Bellevue Regional Library, Bellevue, Wash., *Zimmer Gunsul Frasca Partnership, Seattle, Wash.*

Bass Center for Molecular & Structural Biology, Yale University, New Haven, Conn. *Kallman McKinnell & Wood Architects, Inc., Boston, Mass.*

Arlington National Cemetery Facility Maintenance, Arlington, Va., *Kress Cox Associates, P.C., Washington, D.C.*

Boyd Lighting Headquarters, San Francisco, Calif., *Brayton & Hughes, Design Studio, San Francisco, Calif.*

Guest House, Medina, Wash., *Bohlin Cywinski Jackson/James Cutler Architects, Bainbridge Island, Wash.*

Paul Cummins Library, Crossroads School, Santa Monica, Calif., *Steven Ehrlich Architects, Santa Monica, Calif.*

Urban Design

Layfayette Courts, Baltimore, MD, *CHK Architects & Planners, Silver Spring, Md.*

Tribeca Bridge, New York City, *Skidmore, Owings & Merrill LLP, New York City*

Parco San Giuliano, Venice, Italy, *Comunitas, Inc., Boston, Mass.*

Kakaako Makai Area Development Strategy, Honolulu, *ELS/Elbasani & Logan Architects, Berkeley, Calif.*

Saigon South Master Plan, Ho Chi Minh City, Vietnam, *Skidmore Owings & Merrill LLP, San Francisco, Calif.* ►



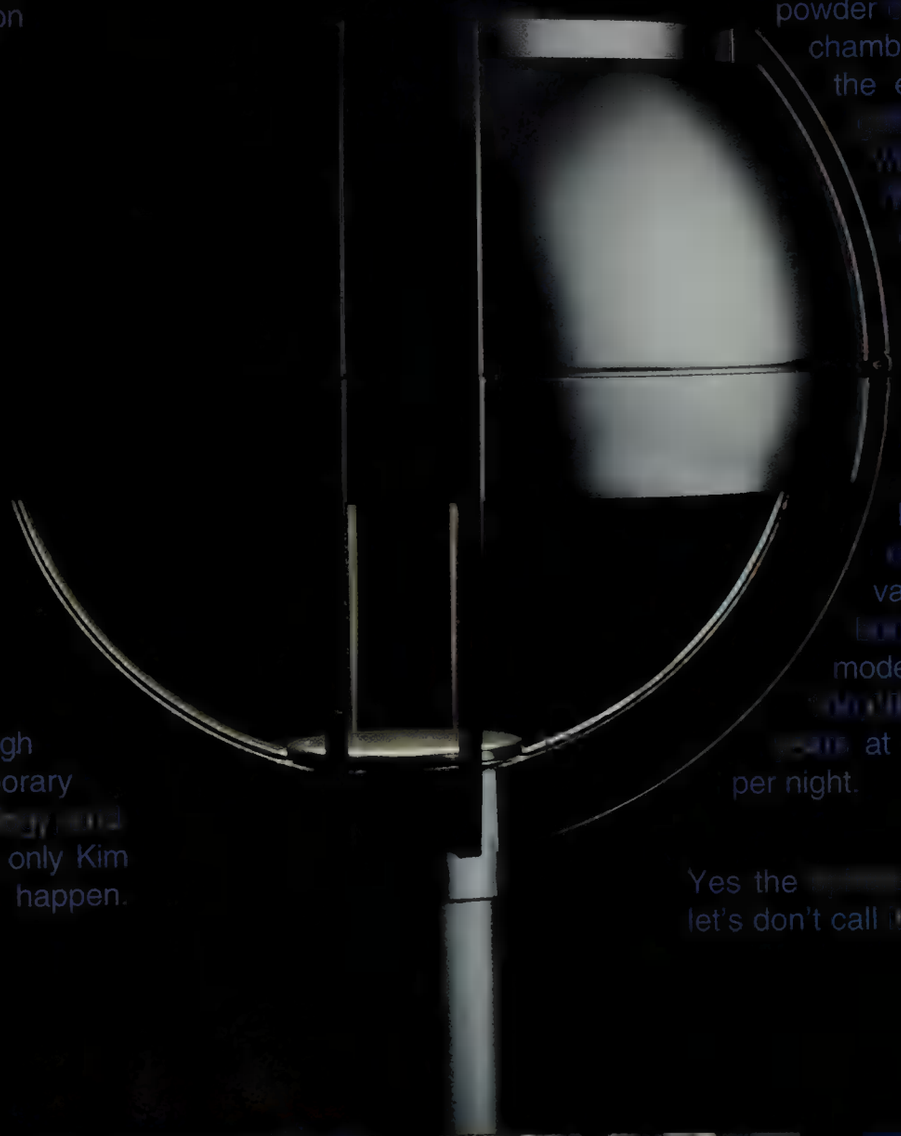
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CIRCLE 25 ON INQUIRY CARD

GEHRY DESIGNS "FAR OUT" INTERACTIVE MUSIC MUSEUM

Seattle, birthplace of Jimi Hendrix, The Kingsmen, and grunge, will soon have its own interactive music and performing arts museum. The Experience Music Project (EMP), founded by local billionaire Paul Allen and designed by Frank Gehry, is scheduled to break ground in May for a 1999 opening. The $60 million complex "will use music to engage people in an entirely new way," Gehry said. "The exhibits and the building treat music as a living and evolving art form. I wanted the building design to evoke the energy of music."

The design is evocative—though critics disagree on exactly in what way. Some say the building resembles a Picasso painting. A reporter for the *Seattle Times* wrote that it looks like "a space-ship that fell from the sky and got a little roughed up on landing."



A building not unlike strings and pieces of a guitar.

"To those who say it looks like broken crockery," Gehry responded, "it took 30 models to get here. I didn't have a nightmare and do it."

The three-story, 110,000-sq-ft complex is formed by an arrangement of six building components, whose exterior surfaces and colors (bright orange, blue, and gold) are meant to recall pieces of broken Stratocasters (these being the instrument of choice for Hendrix, Kurt Cobain, and not coincidentally, Paul Allen) right down to the looping overhead cables that look like busted guitar strings. The building will also use unconventional building elements, including colored stainless steel, terrazzo, and glazed tile. The spirit of Hendrix appears in the form of a transparent overhead mural, and in psychedelic images anchoring some of the walls.

Museum designers intend to combine the interpretive aspects of a traditional museum, the educational role of a school, the research facilities of a specialized library,and the audience-drawing qualities of a performance hall, according to Jody Patton, executive director. The facilities will include a 35,000-sq-ft exhibit space, a 150-seat auditorium, 5,000 sq-ft of public gathering space, cafe, museum shop, classrooms, an interactive sound lab, and the Electric Library, a multimedia archive. The permanent collection includes examples of musical instruments and equipment, photographs, films, artists' personal effects including costumes, jewelry, handwritten lyrics and other memorabilia, and extensive recorded-sound archives. Programs and exhibits will explore American popular music and culture with an emphasis on Northwest musicians and rock'n'roll.

The EMP is part of Seattle Center, adjacent to the Space Needle, [illegible] and performing arts facilities on an amusement park. [illegible] project the first-[illegible] be 500,000.

BOAT OR BUILDING? The Whampoa Building in Hong Kong, a fantasy come to life for billionaire Li Ka-Shing, is filled with shops, restaurants, a health club, and other mall stuff. Tacky? You be the judge.



VENTURI, SCOTT BROWN QUITS FERRY PROJECT

With its most recent design for Manhattan's Whitehall Ferry Terminal scrapped by New York City officials, Venturi, Scott Brown and Associates (VSBA) has decided to withdraw from the project.

The Philadelphia-based architecture firm had won the competition for the project in 1992 with a controversial design featuring a three-story waterfront clock facade. The firm's latest design replaced the clock with a programmable electronic message board [RECORD, February 1996, page 11]. But the city has decided to go with a plain metal-and-glass facade instead. VSBA had worked on two major designs and dealt with a $30-million budget reduction before deciding to step away from the project.

A spokesperson for the city's Economic Development Corp. said the firm's exit will not hamper the terminal's construction schedule, maintaining that the $82-million facility will begin construction in 1998 and be finished by late 2001.

VSBA's second design was met with opposition by Staten Island Borough President Guy Molinari, who claims that Staten Island residents were concerned that the electronic message board would be too glitzy. "I thought the clock was offensive and the second proposal, the electronic 'zipper,' was equally offensive," said Molinari. "It's not compatible with its surroundings... We've got a great view of lower Manhattan [from Staten Island] and we don't want to lose it," he added.

City officials were worried that community opposition would further delay the project, which is already three years behind schedule.

Others, however, felt that the review process had been undermined. "Venturi, Scott Brown were not treated very well in this process," said Tamara Coombs, chairwoman of the Ferry Riders Committee, a civic group. "Their second design was never properly presented to the public and a public forum of discussion with the architects has never taken place... A photo of their second proposal was published in a local paper and Staten Island residents were asked to call up a polling number and express whether they liked or didn't like the design!" VSBA declined to comment since the terms of its withdrawl are still being negotiated.

Anderson/Schwartz Associates of Manhattan, associate architect on the project, will continue to work on the revised design, which includes a two-story ferry terminal, outdoor walkways, shops, restaurants, a public plaza, an outdoor promenade, and direct access to subways and buses. *Katherine Kai-sun Chia* →

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The John E. Anderson School of Management is another outstanding example of how the C/S Group answered a challenging expansion joint problem.

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HARD-WON RENOVATION OF SARASOTA'S RINGLING MANSION IS UNDERWAY



In the early 1920's, when architect Dwight James Baum was first approached by circus doyens John and Mabel Ringling to build Ca'd'Zan, a Venetian-Gothic Renaissance palace with features of [old] Madison Square Garden, he was said to have visibly paled. More recently, the State of Florida, faced with renovating the deteriorating Ca'd'Zan, that the Ringlings bequeathed to it, paled too—at the bill. But after several years of intense lobbying, the state senate approved $3.5 million of appropriations, with private contributions expected to make up the difference in a $7-million restoration of the Sarasota landmark.

Years of neglect and "non-malicious but nevertheless effective self-destruction" has seen the 70-year-old, 30-bedroom, 14-bathroom palazzo literally crumble, according to Jan Abell, AIA, the Tampa-based architect who's working with primary architects Ann Beha Associates of Boston on the restoration. "The marble boat dock has disappeared—either to the bottom of Sarasota Bay or in people's bathrooms," Abell said. The multicolored terra cotta, which was a principal material used on the exterior and interior, was anchored by steel, "and years of exposure to sea air has led to corrosion and devastation." The enormous stained-glass windows in the Great Hall, made of hand-rolled Venetian glass in hues of amber, amethyst, ruby, emerald, and sapphire, were battered by tropical storms.

Where weather wasn't a culprit, humans were; a quick and careless installation of air conditioners in the 1950s placed vents near 15th century Flemish tapestries; and there was never an attempt to seal out humid exterior air from rushing in whenever a visitor opened the door. The interior decorations, much of it purchased in the 1920s from the estates of Vincent Astor and Jay Gould, were moved to the adjacent Ringling Museum for safekeeping. (Another testament to the Ringling ego, the museum, also owned by the state, is considered one of the finest Baroque collections in the world.)

The 14-month restoration project, now under way, will repair the exterior, upgrade the fire safety system to code, replace outdated air conditioning, plumbing and electrical systems, and create a new visitor entrance. Further appropriations will allow for continued restoration of the interior.

The Ringlings, who had little apparent inclination toward subtlety, still had an appreciation for quality and whimsy. The tubs were hewn out of solid marble, the ceilings of the ballroom and game room (rumored to be a party room during Prohibition) were painted by the Ziegfeld Follies set designer Willy Pogany, who painted Venetian Carnival scenes starring the Ringlings in costume. One of the mansion's most interesting quirks, Jan Abell discovered, was the "exquisite terra cotta work, a combination of mythical and astrological characters" at the top of the six-story tower, which originally flashed a brilliant red light when the Ringlings were in town.

"The quality of the work is phenomenal," she said, "and to put the effort and energy that only two people would ever see is really remarkable." *Julie Moline* →



Ca'd'Zan: a palace built for two (top). The multi-colored terra cotta was corroded by years of exposure to sea air (right).

LARGEST GIFT EVER TO SUNY GOES FOR ASIAN AMERICAN CENTER

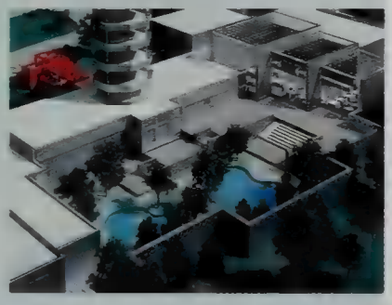
Twenty-five million dollars, the largest single gift ever received by the New York public university system, will be used to construct and operate an Asian American Center at the State University of New York (SUNY) Stoneybrook, Long Island. The gift comes from Charles B. Wang, CEO of Computer Associates International. The center will be named for him.

The 25,000-sq-ft facility has been designed by architect P.H. Tuan, principal of P.H. Tuan and Associates of New York City. According to a spokesperson for Tuan, the design concept emphasizes a flexible free-form plan that can be adapted and added to based on the changing needs of the center over time.

Upon entering the center through a series of abstracted gates, the visitor will be able to look up and see the inside of the "light" tower that rises from the middle of the complex. Composed of glass and metal, the tower will reflect and refract light throughout the day and night. A large landscaped garden and pond along the north side of the center, and open-air landscaped courtyards within the complex, provide views as the visitor moves from room to room inside.

The design includes a large multi-purpose common area with food kiosks serving a variety of Asian foods; a 200-seat theater; art gallery; audio-visual library with an Asian-American oral history archive; computer laboratory; conference, reading, and lecture rooms.

The center will serve the growing Asian and Asian-American population at the Stoneybrook campus, which now accounts for approximately 4,600 of the 17,000 total student body. Ground breaking for the Charles B. Wang Asian American Center is scheduled for spring of this year.



HEALTH CLINIC FOR PEOPLE SENSITIVE TO BUILDING MATERIALS

Architects working on the Fall River Environmental Health Centre in Fall River, Nova Scotia, had an interesting challenge: how to create a treatment clinic that didn't make already sick people sicker.

Patients treated at the health center suffer from hypersensitivity to substances normally found in buildings—in paint, cleaning supplies, certain metals, glue, industrial lubricants, and synthetic fibers in carpets and fabrics. To avoid exacerbating patient symptoms, the architect, William Nycum & Associates Ltd., put interior components for the 8,000-sq-ft facility through a rigorous three-step vetting process, one of which involved testing interior components on people with a variety of chemical sensitivities to see whether any part of the clinic would trigger reactions.

All of the building's steel components, including metal studs, structural steel, roof deck, catwalks, and even screws for mounting drywall, were prewashed offsite to remove oils. Load-bearing structural glazed ceramic fire brick, which can be washed with clear water, was used for the interior and exterior finish on the walls, and radiant-heated flooring with a ceramic tile surface replaced carpeting. Oversized overhead conduits allowed workmen to position electrical wires without the aid of a lubricant. Highly filtered air and low-emission materials produce minimal background odor, which triggers reactions in some highly sensitive patients.

To keep the air inside clean, a dual mechanical system allows 100 percent fresh filtered air to enter, and 70 percent of the interior air to recirculate. This minimizes exposure to environmental emissions like woodsmoke, according to architect William Nycum.

Occupancy is slated forJanuary 15, when the clinic, part of Dalhousie Medical School, will begin to serve the first 1,000 people currently on a waiting list. *Andrew Safer*

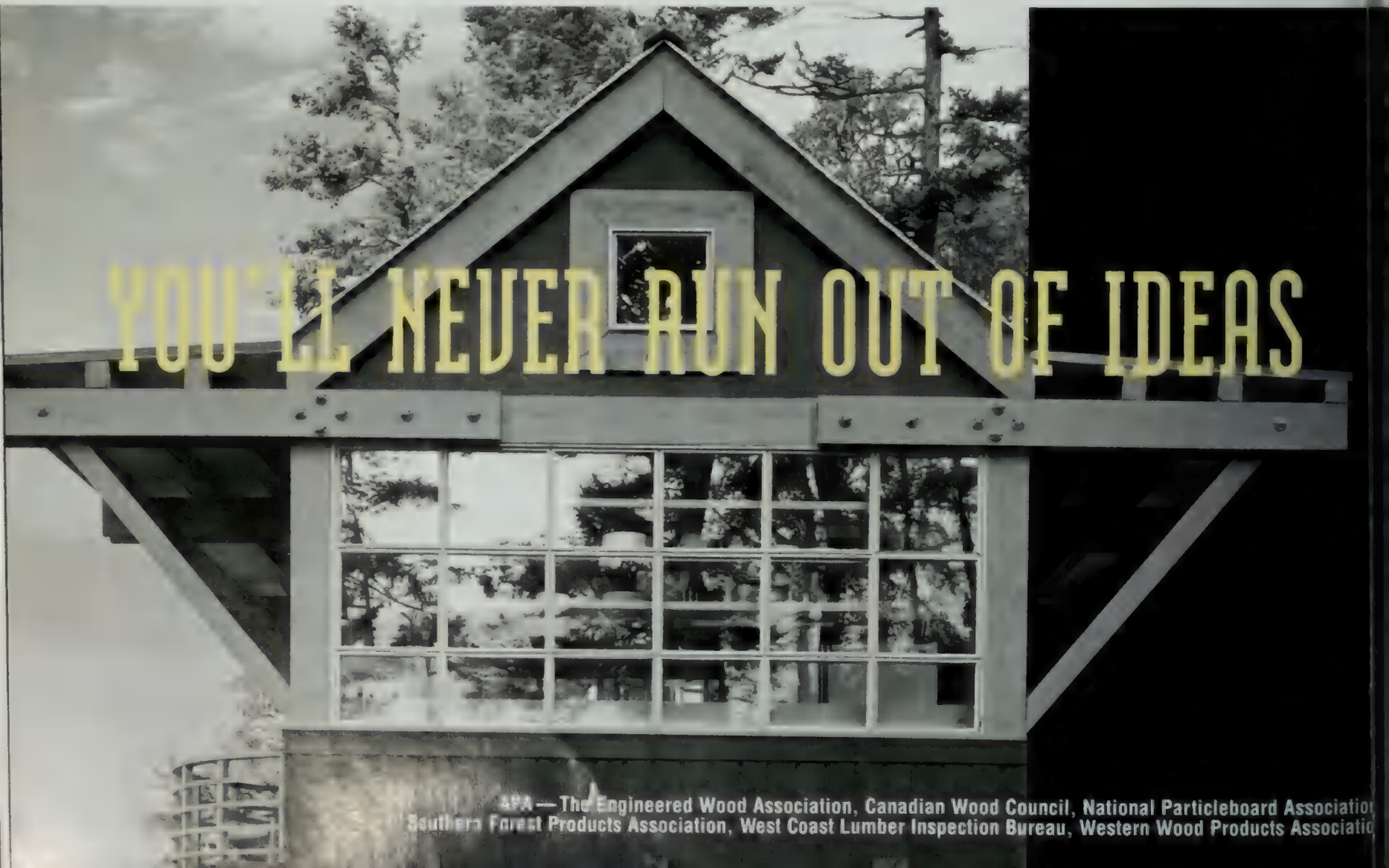
PREDOCK BUILDS DANCE STUDIO IN FOREST OF EUCALYPTUS TREES



Adjacent to his 1991 Mandell-Weiss Forum at the University of California, San Diego, Antoine Predock Architect has designed a 14,523-sq-ft dance studio facility scheduled to open in Fall 1997. In contrast to the forum which occupies a clearing in a grove, the new facility is inserted into a forest of eucalyptus trees.

Three dance studios are grouped around a courtyard and organized by a curving wall which links the studios to the main campus and the forum. By weaving the facility into the trees, Predock creates exterior spaces for casual gatherings and impromptu performances. Glazing in the courtyard is intended to reflect the rhythms of the surrounding trees, and apertures in the arcing wall allow ventilation and light into the facility.

Support spaces include locker rooms, office space, and storage for equipment. The design is "a dance on the site, an impulse toward movement," explained Predock, adding that the dynamic tension between the building and its site echoes the choreographic relationship between dancers. *Katherine Kai-sun Chia*



DUANY AND PLATER-ZYBERK DESIGN CANADA'S LARGEST NEO-TRADITIONAL COMMUNITY

A 1,275-acre site in Markham, Ontario, once earmarked for a new international airport, will instead become Canada's largest neo-traditional community, Cornell.

The plan, which won over 14 other proposals, was developed by city planners and architects Andres Duany and Elizabeth Plater-Zyberk of Miami. Duany described it as his firm's "absolutely flawless, best, flagship project."

Over the next 20 years, Toronto-based Law Development Group will build 11 distinct neighborhoods, "each with parks, open spaces and services," according to architect/developer Larry Law.

When it is finished, Cornell will contain 10,000 homes, 1.8 million sq-ft of office space, and 300,000 sq-ft of main street retail space and apartments. Developers will also restore 22 pioneer-era farms and other heritage structures.

The $73 million site, in a Toronto suburb of 160,000 residents northeast of the city, adjoins 15,000-acre Rouge Park, North America's largest urban park. The first neighborhood of 700 homes will be marketed this spring.

According to Duany, the manual his firm developed for Cornell, concerning the rules governing the way it will be built, is becoming a model for the firm's projects internationally. "We've been able to make the whole system of coding that guarantees urbanity and all the things that were promised much more efficient."

Cornell's master plan was endorsed by Markham planners and local government in 1994 after presentations and consultations with area residents, usually presided over by Duany. *Albert Warson* →



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NEWS BRIEFS

Minority architect awards announced The National Organization of Minority Architects (NOMA) has awarded five 1996 Design Excellence Awards for Outstanding Achievement in Architectural Design. Moody/Nolan Ltd., Inc., a Columbus, Ohio architectural and engineering firm, received three of the awards for a library and classroom building at the Ohio State University/Marion campus, the Dublin Community Recreation Center in Dublin, Ohio, and the Highbanks Nature Center in Delaware, Ohio. Peter L. Wong Architects, Charlotte, N.C., won for the House for 1713 Tippah Avenue in Charlotte, and Stanley, Love-Stanley, P.C., Atlanta, Ga., received the award for the Youth Arts Connection Gallery for The United Way of Metropolitan Atlanta.

AIA/New York chapter gets HUD grant The New York Foundation for Architecture, a non-profit subsidiary of the AIA/New York Chapter, has received a $100,000 University Partnership grant from the U.S. Department of Housing and Urban Development. Titled "From Istanbul to Harlem: Bringing Habitat II Home," the grant was initiated by chapter president Robert Geddes, FAIA, who participated in the housing conference Habitat II in Istanbul last year. "Our intention is to follow through on the United Nations Declaration on Human Settlements and the Habitat II Agenda, working with communities, working as architects," Geddes explained. The City College of New York School of Architecture and Environmental Studies will work with the New York chapter focusing on Harlem and the Upper Manhattan Empowerment Zone.



U. of Maryland's new library

U. of Maryland's new high-tech library Boston-based Perry Dean Rogers & Partners, Architects, has teamed with Design Collective, Inc. of Baltimore to design the $23-million Health Sciences Library and Information Sciences Building at the University of Maryland. Currently under construction and expected to open in Spring 1998, the six-story, 180,000-sq-ft building will centralize the university's library and computing resources, creating a specialized training facility for physicians, dentists, pharmacists, lawyers, and nurses. The program elements, linked to advanced computer technology, are designed to encourage collaboration in the creation, assembly, storage, retrieval, and transmission of information.

Tschumi awarded Grand Prix Bernard Tschumi, architect and dean of the Columbia University School of Architecture, was awarded the 1996 Grand Prix National d'Architecture by the French

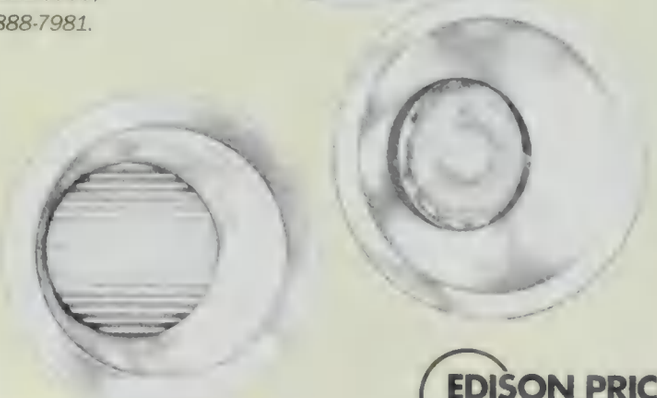
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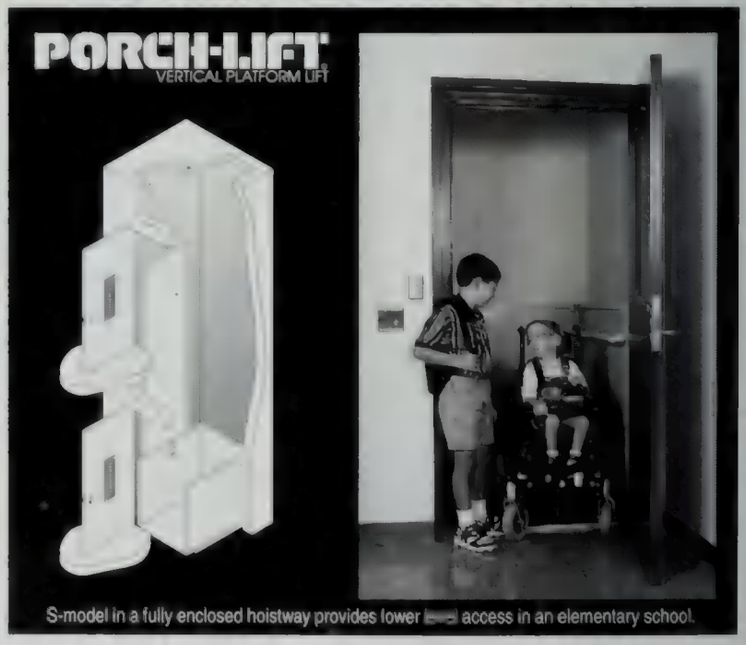




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Ministry of Culture. Previous recipients include Jean Nouvel and Christian de Portzamparc.

Alan Y. Taniguchi wins social activist award The AIA has awarded its 1997 Whitney M. Young, Jr. Citation to architect Alan Y. Taniguchi, FAIA, dean of the school of architecture at the University of Texas. The award honors the late civil rights and urban leader who in 1968 challenged America's architects to play a more active role in social issues. Taniguchi's career spans five decades in architectural education, private practice, and involvement in a variety of professional and civic offices.

Jane Thompson receives industrial design award Master planner and urban designer Jane Thompson was awarded the Industrial Design Society of America 1996 Personal Recognition Award for lifetime contribution to the field of design. Thompson, who practiced with her husband Benjamin Thompson, FAIA, from 1966 to 1993, was founder and editor in chief of ID (*Industrial Design* magazine) in 1954, and an active leader of the International Design Conference in Aspen (1971-1996).

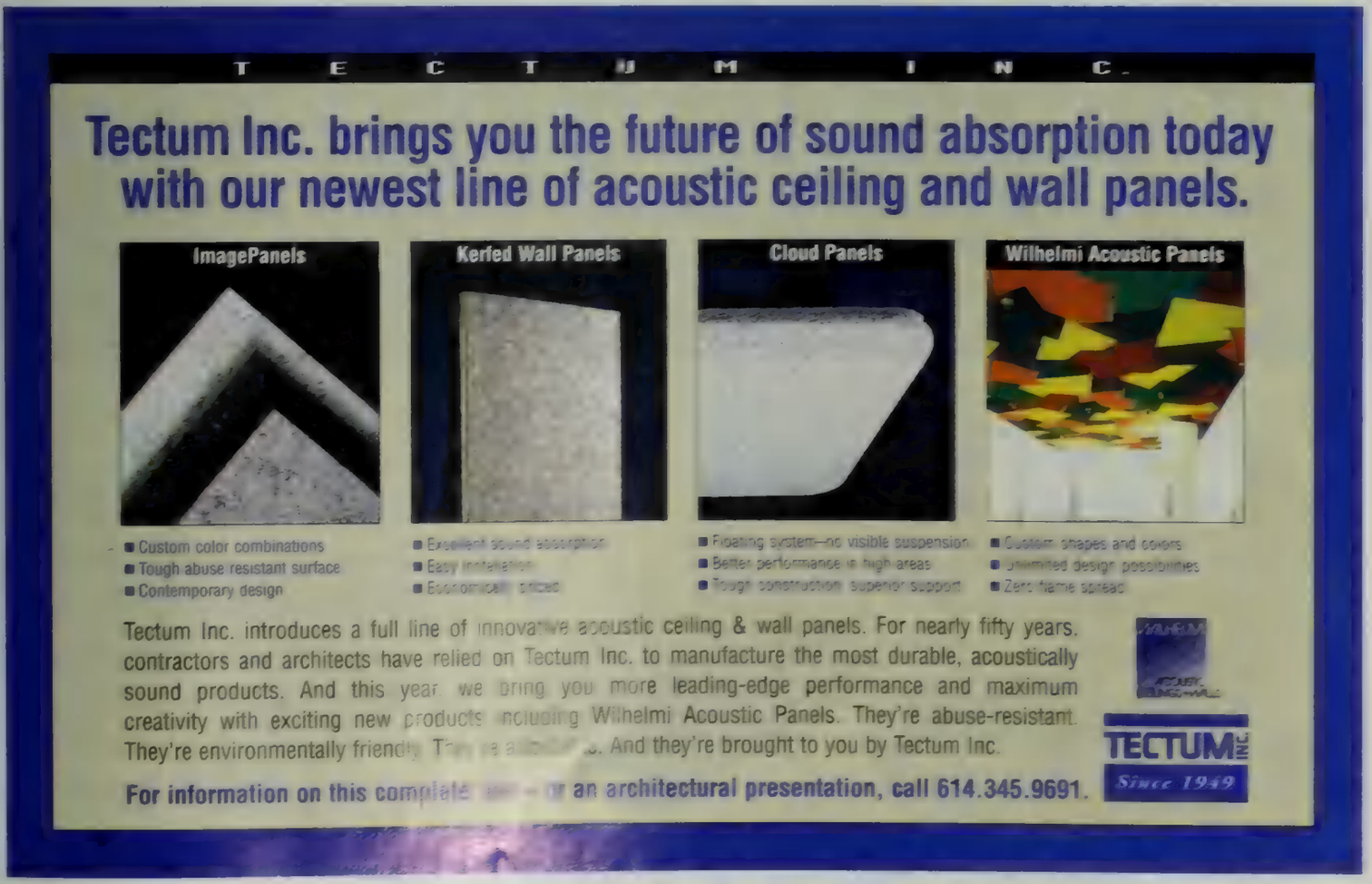
Historic preservation grants apportioned The U.S. Department of the Interior has apportioned $33 million for historic preservation grants to the 50 states, the District of Columbia, the U.S. Territories, the Federated States of Micronesia, the Republic of the Marshall Islands, the Republic of Palau, and the National Trust for Historic Preservation. Grants, available through September 30, 1998, may be used for a broad range of activities such as historic property inventories, resource protection planning, monitoring compliance with federal historic preservation requirements, technical assistance to private interests seeking to preserve historic resources, assisting local government preservation programs, and acquisition or development of historic properties. The National Parks Services will administer these funds as part of the Historic Preservation Fund.

Art museum goes to Predock The commission for the $6 million, 30,000-sq-ft Skidmore College Teaching Gallery and Art Museum, Saratoga Springs, N.Y., was awarded to Antoine Predock Architect of New Mexico. Others considered for the project include Frank O. Gehry & Associates, and Venturi, Scott Brown with Einhorn Yaffee & Prescott.

Aga Khan honored The World Monuments Fund honored His Highness the Aga Khan, spiritual leader of the Ismaili Muslims, with its Hadrian Award for his efforts to preserve and revitalize historic cities in Islamic countries. Previous recipients include the Prince of Wales, David Rockefeller, and Dominique de Menil.

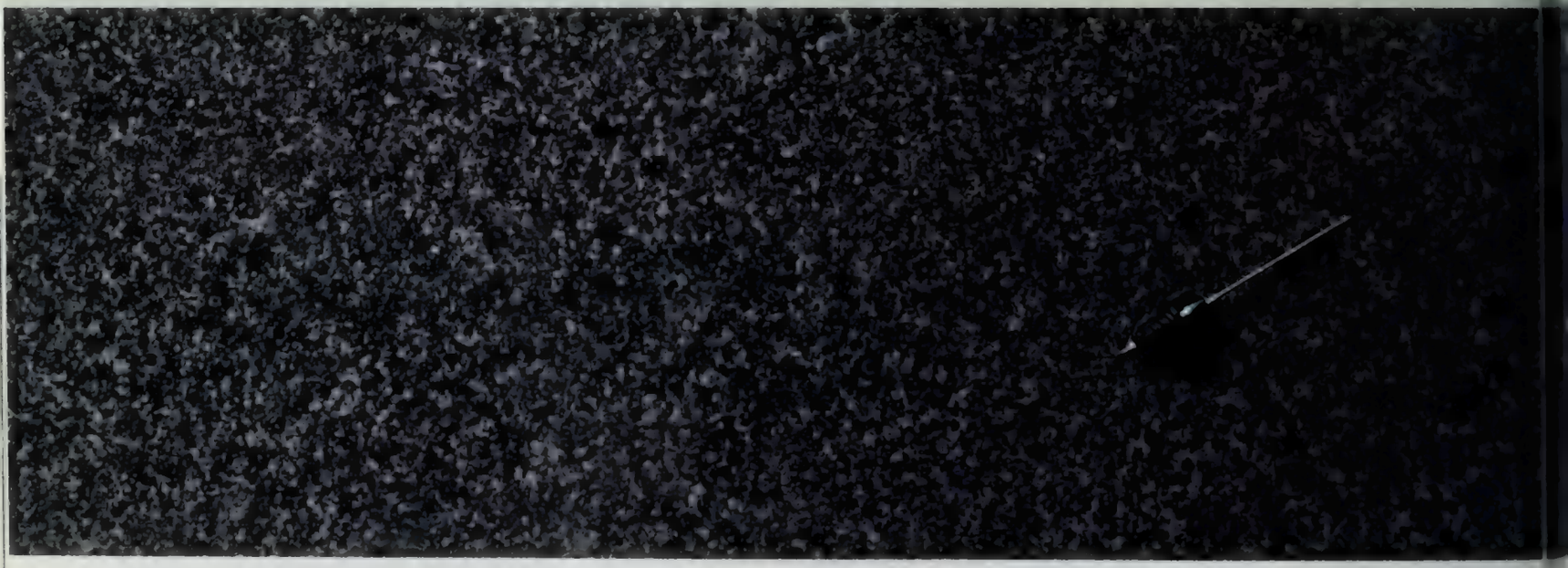
New campus center for U. of Colorado Centerbrook Architects and Planners of Essex, Conn. and the Davis Partnership of Denver, Colo., have just completed the design for a new Campus Center for the University of Colorado Health Sciences Center in Denver. The $40.8 million center will include 225,400-sq-ft of new and renovated construction surrounding a new central quadrangle.

Gae Aulenti to design San Francisco museum Milan-based architect Gae Aulenti and the joint venture of Hellmuth, Obata & Kassabaum, LDA Architects, and Robert Wong Architect have been selected to design the new Asian Art Museum in San Francisco's Civic Center. The new museum will occupy the Old Main Library, built in 1917 as a key component of the Beaux Arts Civic Center Plan. The Musée d'Orsay in Paris and the Palazzo Grassi in Venice are two of her best known projects. ■



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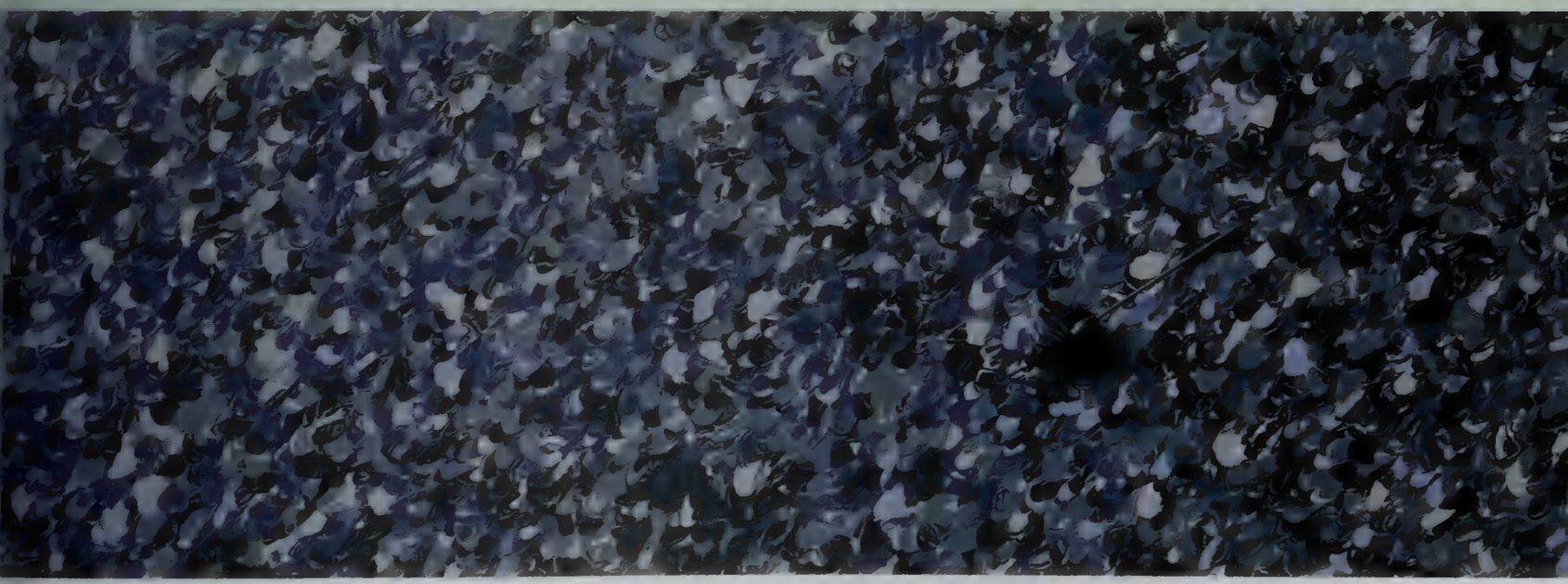
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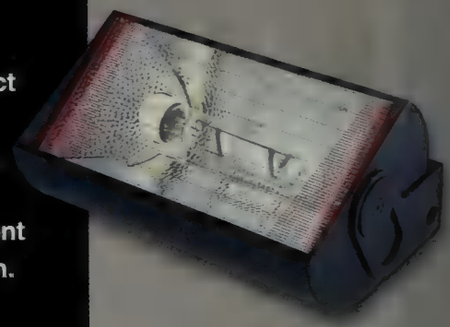
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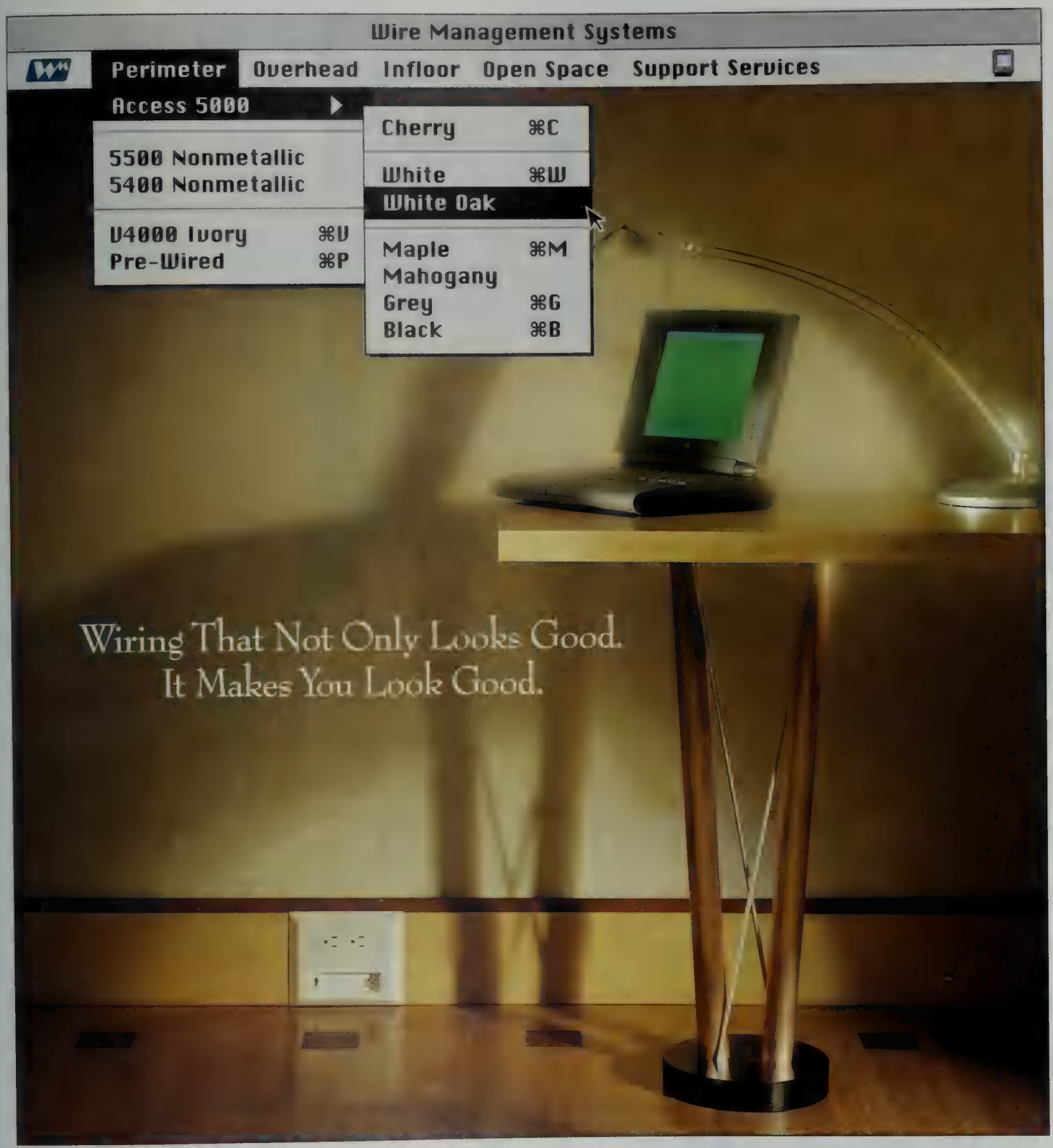
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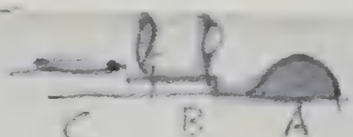
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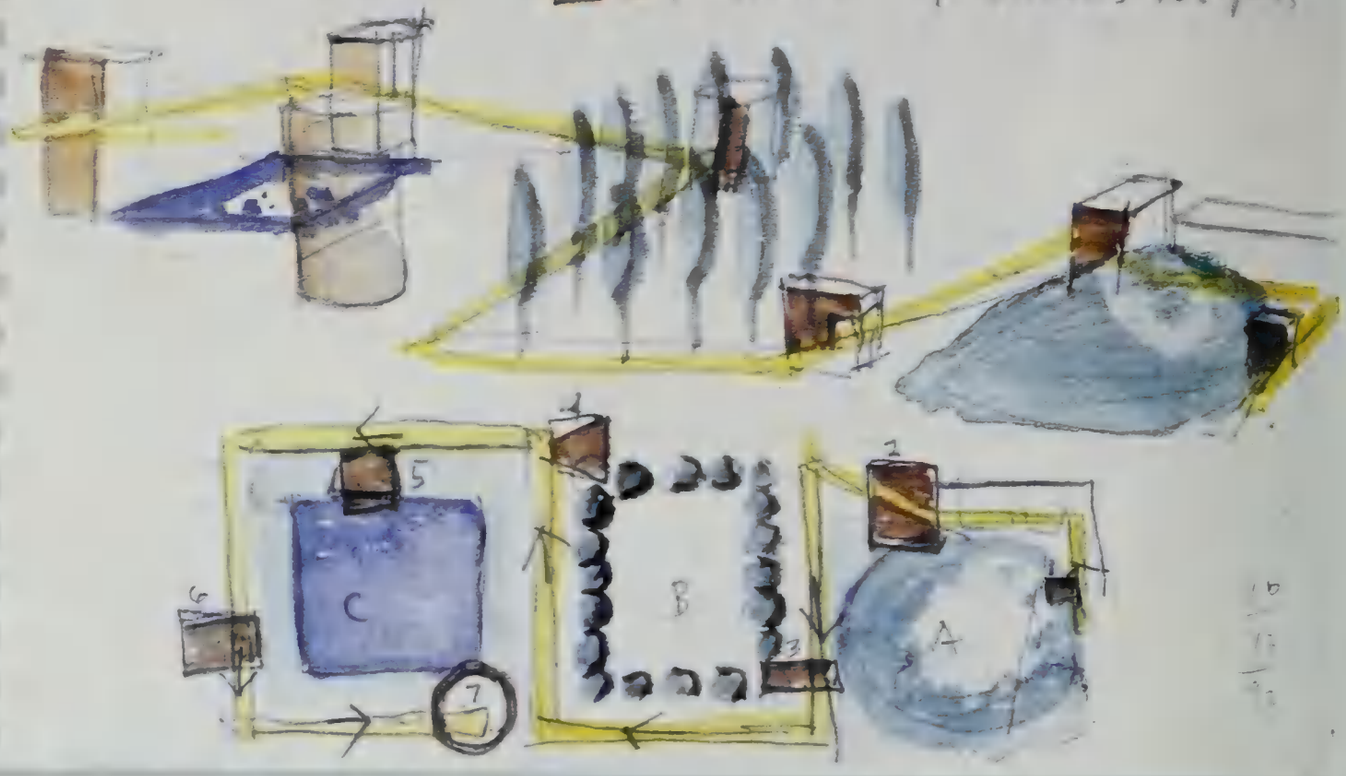
CIRCLE 42 ON INQUIRY CARD



= 3 Spatial Levels; A / B / C

= MAIN "Route" or Journey

= 7 "Houses" of BASHO's Disciples

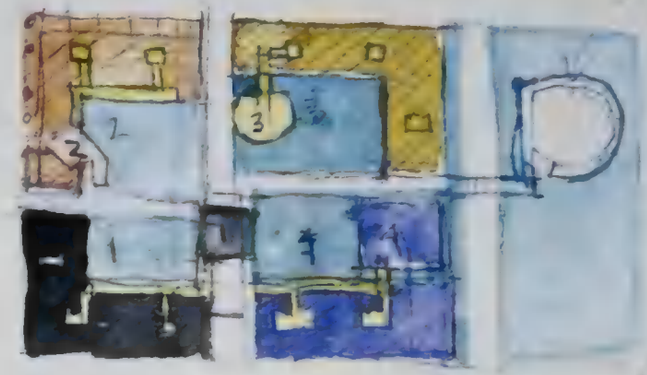


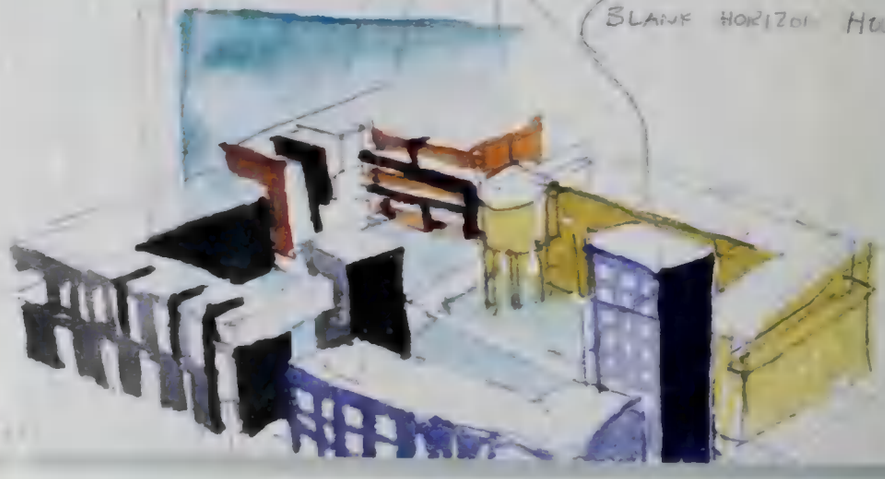
Houses of BASHO's Disciples

THE NARROW ROAD TO THE DEEP NORTH

N

1. VISION INHABITED HOUSE
2. HOUSE of ANONYMITY
3. HOUSE of fallen PERSIMMONS
4. PACIFIC HORIZON (BLANK HORIZON HOUSE)





PROJECT DIARY: Steven Holl's MAKUHARI HOUSING COMPLEX is his biggest project, and biggest struggle as an architect, to date.



First impressions. At the site, from left: Steven Holl, Tomoaki Tanaka of Holl's office, town planner Koichi Sone. Opposite: Holl's sketch book.

by Karen Stein

In the late 1980s, getting a job in Japan was, for an American architect, a major coup—a sign of international acclaim and the chance to benefit from foreign economic prowess. Not only did it mean that the architect was most likely working at a scale larger than sagging market conditions permitted at home, but also that the treatment by the client—in keeping with Japanese traditions of business etiquette and respecting artistic endeavors—was better. This was certainly the case for Steven Holl, AIA, when he designed a 28-unit housing block in the southern port city of Fukuoka as part of an all-star group of architects who were selected for the project by its "art director" Arata Isozaki. Isozaki also acted as a buffer between client and architect. Things would be different in Makuhari.

AUGUST 1992

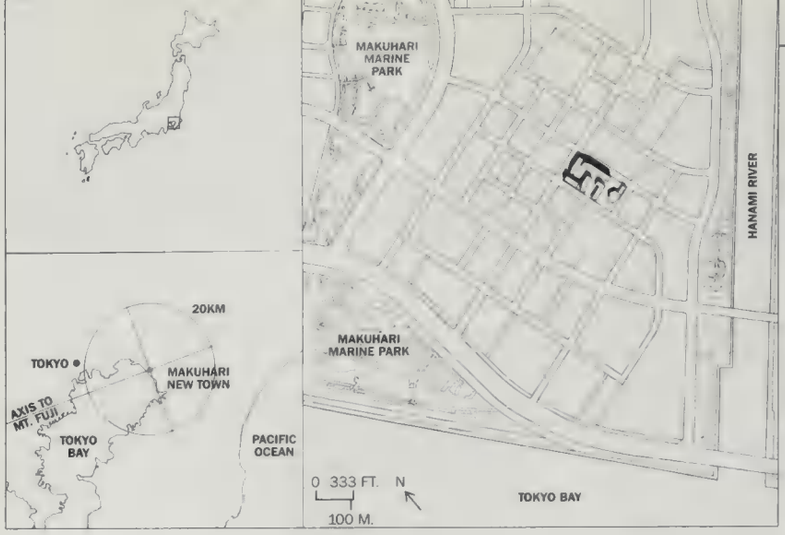
Steven Holl was first invited to Makuhari, located in Japan's Chiba prefecture on the outskirts of Tokyo, in August, 1992, based on the strength of his Fukuoka design. The developer, Mitsui Fudosan Group, the largest builder of housing in Japan, had never worked with a "design" architect before, much less an American one. In Makuhari, however, town-planning codes and finances—specifically, the strong yen versus the dollar—made both appropriate.

Makuhari is a new town, and like other such communities outside of overdeveloped Tokyo, it's built on landfill—a dredged parcel at the rim of Tokyo Bay to the southeast of the city's downtown. The urban planners of the residential portion of the town were dissatisfied with existing models of "social housing" and sought to create something distinct in Makuhari. The planning group, which included its board Koichi Sone of Environmental Design Associates, studied pedestrian-scale European and American models ranging from the International Building Exhibition, known as IBA, in Berlin, to the Olympic Village in Barcelona, and Battery Park City in Manhattan.

Based on these precedents, the Makuhari planners established rules for building heights and setbacks, mandated tree-lined streets, ordered a mix of commercial and residential use, and required that each city block—the unit of development—be designed by three or four different architects in order to guarantee variety. The idea was to "add an international image" to the existing business center of the town, which includes a massive exhibition hall designed by Fumihiko Maki, according to Sone. Maki's Makuhari Messe is meant to compete with Rafael Viñoly's newly-completed and more lavish Tokyo Forum for international trade shows and conventions. Like the Forum competition organizers, the residential planning board agreed to look outside Japan for some of its architects. "[The board] chose a non-Japanese prototype for the town. It was better to invite those familiar with the type," explains Sone of the decision. While the board was worldly in its outlook, the developers competing for parcels to build on had their own goals, the primary one being financial. Says Junichi Kogo, deputy branch manager of Mitsui Fudosan: "We always start from profit."

Enter Holl. After he and his Japanese associate Tomoaki Tanaka made their first site visit in August, 1992, Holl began noting his impressions in his sketch book, along with scenarios for accommodating the required 180 housing units, roughly half of which would be subsidized rentals, with the rest selling at market rates. While Holl agreed with the

Project: *Makuhari Housing Chiba, Japan*
Client: *Mitsui Fudosan Group*
Architect: *Steven Holl Architects—Steven Holl, principal-in-charge; Tomoaki Tanaka, project architect; Mario Godden, Thomas Jenkinson, Janet Cross, Terry Surjan, project team/master plan phase; Anderson Lee, Sumito Takashina, Sebastian Schulze, Gundo Sohn, Justin Korhammer, Bradford Kelly, Lisina Fingerhuth, Anna Müller, Jan Kinsbergen, Hideaki Ariizumi, project team/design development, construction document phase*
Associate Architects: *Kajima Design—Toshio Enomoto, Masahiro Shimazaki, Kazuhiko Funo, Akihito Morino, and Yasushi Ninomiya, project team; K. SONE + Environmental Design Associates—Kouichi Sone, principal-in-charge; Tomoko Watanabe, project architect; Yoshihiro Kanamaru, Hisakazu Ishijima, project team*
Engineer: *Kajima Design*
Consultants: *Kouichi Sone (block design coordinator); Toshio Enomoto/Kajima Design (block architect); JUKA Garden and Architecture (landscape); L'Observatoire (lighting)*
General Contractor: *Kajima+Kaisei+Mitsui JV*



basic premise of the planning board, he disagreed with its strategy of how to achieve planned variety. "If each face of a four-sided block was done by a different architect, the interior court would be chaos," he argued.

Instead, over a several month design period, he developed another approach that called for a mix of "silent, heavyweight" and "active, lightweight" structures. The "silent" buildings, made from concrete load-bearing walls, form the perimeter of the block, and within their bracket-like forms are the "active" structures, which include gatehouses, a free-standing public meeting room, an observation deck, and a communal "house" overlooking a reflecting pool, all clad in metal. As his journals show, Holl was inspired by his reading of a 17th-century Japanese classic, Bashō Matsuo's *The Narrow Road to the Deep North and Other Travel Sketches*, a travel log in haiku form about the author's journeys, both physical and metaphorical. "The notion of an inner journey gave human dimension to the project," says Holl. He choreographed a flow of movement from inside to outside: exterior corridors to private patios and balconies, to communal bamboo gardens, to a swathe of lawn, passing by the courtyard pavilions. Explains Holl: "In moving through inner gardens, smaller building elements reframe your perspective [so] the massive building elements are much more palatable."

In order to comply with the requirement for three or more architects, the interiors of the residential block, the "silent" buildings, were designed by Sone, a member of the planning board of the entire residential district and the "block coordinator" for Holl's parcel, and Toshio Enomoto of Kajima Design; Kajima also served as the associate architect and engineer of the entire project. A joint venture led by Kajima was designated as the contractor. It was all in the family, Kajima-style.

Sectional massing studies (top row) and concept diagrams (bottom row).

DECEMBER 1992

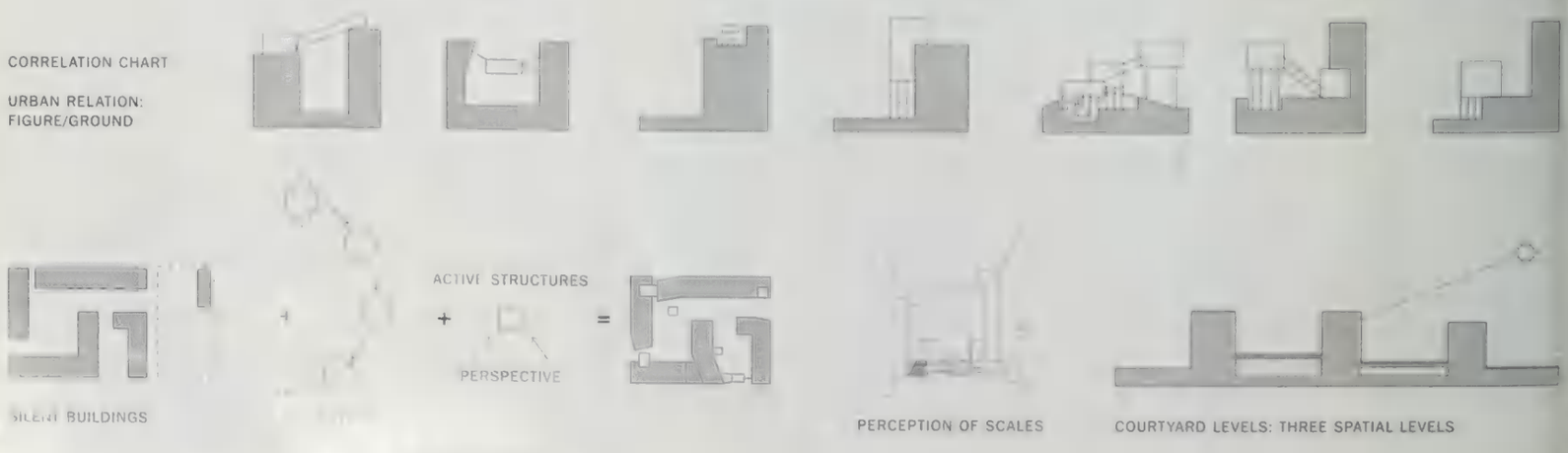
Clearly Holl had done some creative interpretation of the regulations, much less the Japanese notion of housing. Absent a project art director like Isozaki to give artistic prestige to the entire enterprise and run interference with the client, Holl was in the unfamiliar terrain of a corporate behemoth client. When he presented the scheme in December, 1992, to some 35 people in the Japanese client group, he was met with total silence. Holl recalls: "After a long pause, one bureaucrat said we did too much." The silence only deepened after he submitted his finalized proposal package of model and drawings in February, 1993.

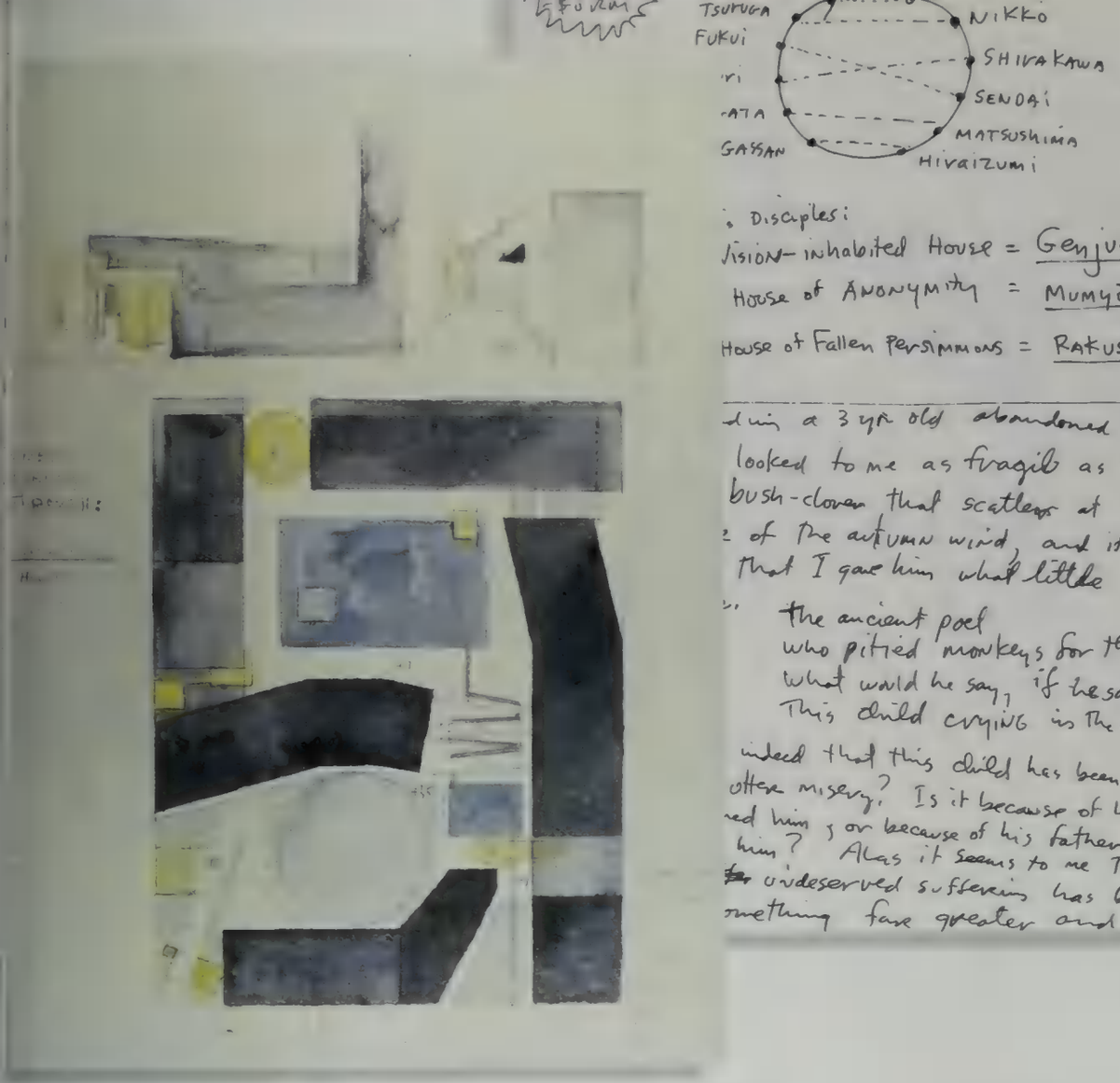
Over a year passed. During that time, Holl's professional fortunes took a drastic turn for the worse. Rumor had it that a Japanese architect was now working on the Makuhari commission and no new jobs were coming in to Holl's New York City office to replace it. While he continued to teach at Columbia University, where he has tenure, he contemplated closing his studio—a shocking state of affairs for an acknowledged leader of his generation who had by his mid-40's received many of the top accolades of his profession, including an exhibition at New York City's Museum of Modern Art in 1989. "I almost went bankrupt," recalls Holl.

By year's end, the pendulum swung back in equally dramatic fashion. In short order, Holl won the competition for the new Museum of Contemporary Art in Helsinki over some 500 other entries, and in March, 1994, he heard from his Makuhari client after 13 months: his project lived again, for the most unlikely reason for this high-style "design" architect. The client liked Holl's parking garage.

Unbeknownst to Holl, developer Mitsui Fudosan had promised the Chiba prefectural government that the project would be done by the end of fiscal 1995, which occurred in March, 1996, so construction had to begin. "The parking in the alternate scheme didn't work as well as our parking," is Holl's recollection of how the decision was made. "They ran out of time. It was the efficiency of our parking that forced them to choose our scheme."

While Holl had recaptured the commission by spring, 1994, it was not given as a carte-blanche acceptance of his unorthodox housing solution. But his use of a straightforward structural system—concrete bearing walls pushed to the perimeter, allowing for windows and balcony openings, and floor slabs that virtually span wall to wall—gained him a crucial ally in contractor Kajima Construction. Holl's approach permitted construction to begin while the other architects involved in the project (Sone and Enomoto) were still refining the interior layouts of the apartments. "It's not the best way to proceed," admits Enomoto.





Steven Holl's sketch books are a mixture of writing and drawing. After visiting the Makuhari site (plan opposite page), Holl continued to study 17th-century Japanese writer Bashō Matsuo's *The Narrow Road to the Deep North and Other Travel Sketches*, written in haiku form, charting out the author's journey (left). Watercolors show massing studies for the combination of "silent, heavyweight" buildings and "active, lightweight" structures.

Because Holl's scheme responded to Kajima Construction's need for an efficient, schedule-driven project, the contractor, in an unlikely turn of events, became a strong voice for design excellence. "I think Steven Holl really understands *what* a house is. Other younger architects have built something closer to a hotel," is the verdict on the overall scheme by Junichi Ogawa, project manager for the contractor. Holl favored the construction system because it reinforced the image of solid, "silent" facades, giving coherence to the various elements comprising the block. Kajima liked the solution for other reasons: it relied on a rational structural grid; with the foundations in place (600 piles driven 60 feet into the landfill), they could get the walls up quickly.

Kogo, the client, was becoming increasingly skeptical of the entire enterprise. Expedience and sellability of the units remained his prime focus and Holl's main thesis was to build something unlike anything currently available on the market—a strategy Kogo perceived as risky, particularly in light of a recent economic downturn in Japan. But, at this point, he had no choice.

DECEMBER 1994

Construction began December 21, and the demands of the construction schedule drove the project. Because of the 13-hour time difference between New York City and Tokyo, work was ongoing 24 hours a day. Questions that arose on the site were faxed to Holl's office and were resolved by the architect while the construction workers slept. Answers awaited them on their arrival at the site the following morning. Tanaka, Holl's project architect, proved essential in this phase too, because of his command of Japanese.

As time pressure mounted, so did the tensions between design intent and construction expedience. For Holl, the difficulties were constantly measured against the perceived opportunity: a small office of some 11 people working on its largest project to date—over $50 million of construction on an entire city block—halfway around the world. But, says Holl, "it was war for every inch." He says he threatened to quit the project



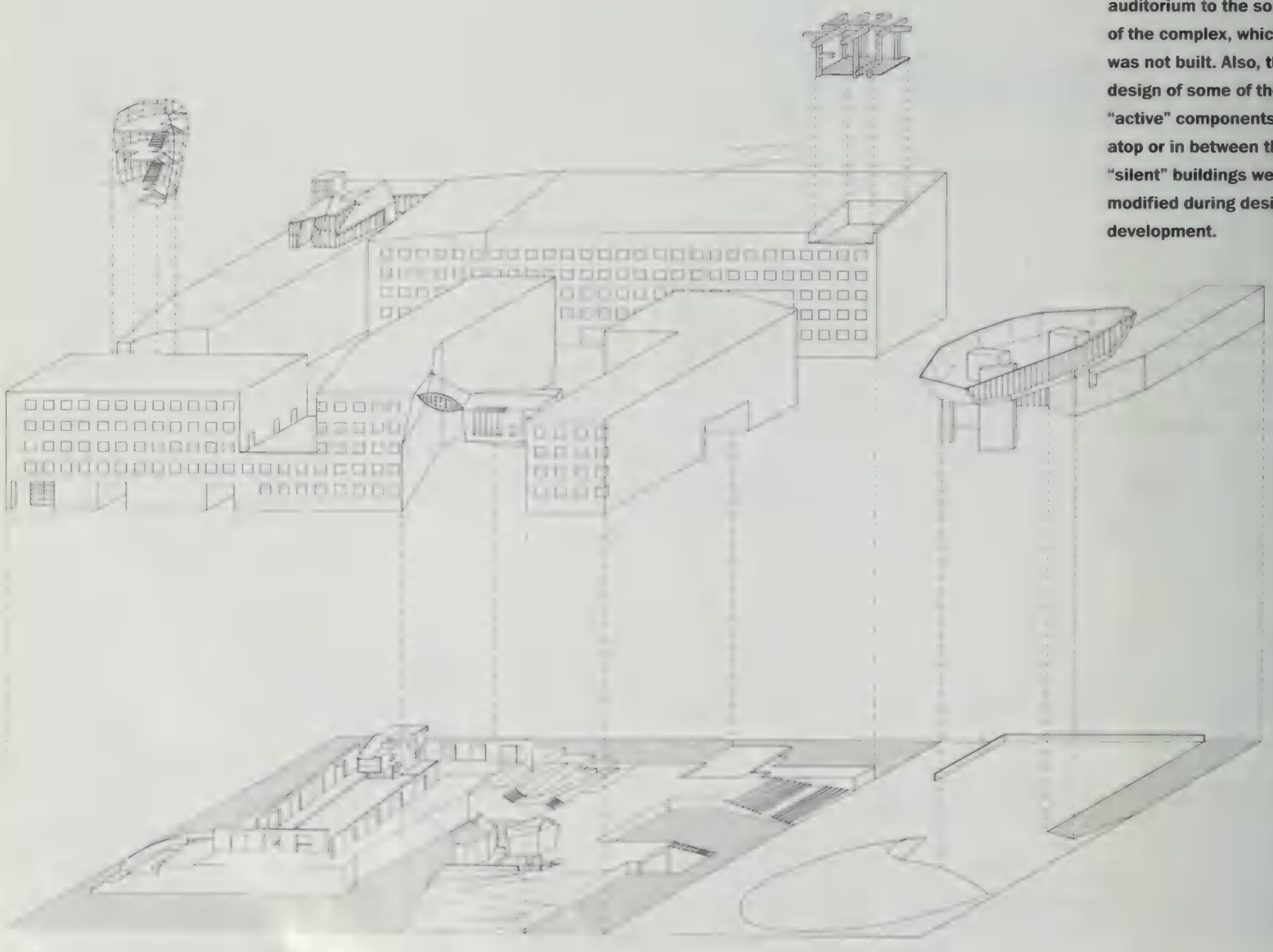
A watercolor done by Holl on September 15, 1992 is a study of light and shadow.



three times during construction over choices of materials and differences in detailing techniques.

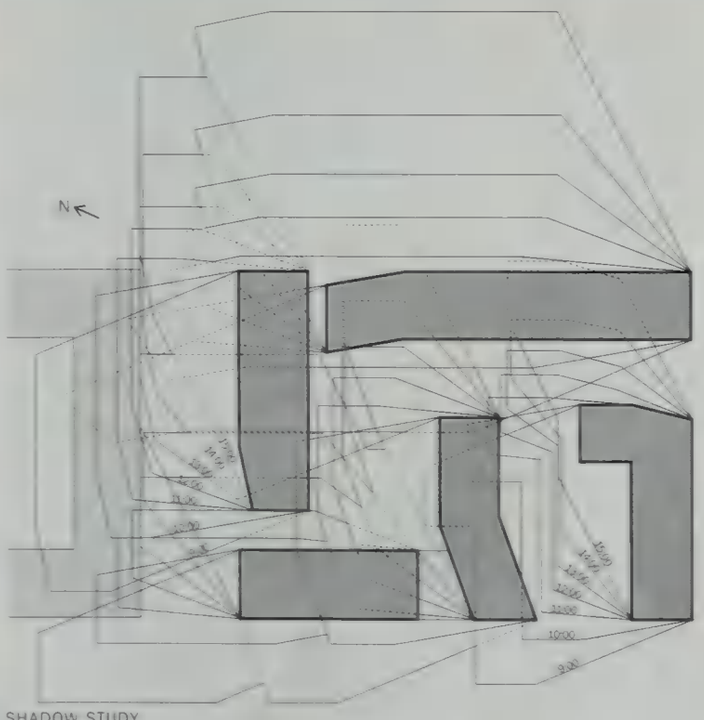
The biggest controversy came over the exterior corridors between apartments, which are within the building envelope. According to the Chiba city planning department, which grants building permits, the floor area of the corridors had to be included in the floor area of the apartments, reducing the overall amount of livable space and forcing an unacceptable price per square foot from the client's point of view. Holl had not interpreted the code to say so, and, in fact, the code only implied this requirement. But in similar projects by Japanese architects the implication had become *de facto* law. Holl pointed out that the corridor was actually meant to satisfy fire-department egress requirements. The fire department refused to approve it on such grounds and bounced the decision back to the city planning department, where Enomoto of Kajima Design argued Holl's case over a two-month period. Eventually Enomoto was able to gain approval from the officials by making a large-scale sectional model of the passageway that convincingly demonstrated the degree of openness of the corridors.

Enomoto jokingly calls this difference of opinion between Holl and Japanese city planning officials "the invisible trade barrier," an epithet that goes to the heart of the cultural differences at work. How much of a suggested guideline is accepted and how much is questioned and upon whose authority? For an outsider, the answer is different. It also hints at a larger issue. While trade restrictions between Japan and the U.S. are the subject of on-going debate among politicians *(text continues on page 77)*



The presentation model (above) and an early axonometric of the complex include an auditorium to the south of the complex, which was not built. Also, the design of some of the "active" components atop or in between the "silent" buildings were modified during design development.

Japanese code requires that each apartment in the complex have a minimum of four hours of sunlight each day. What Holl calls the "faceting and folding" of the exterior facades was done in response to a study of sun angles in the region (see shadow study drawing right). The east gatehouse, called the "Sunlight Reflecting House" by the architect, acts not only as a ceremonial entry piece to the complex, but also as a giant reflector, thanks to its shiny, metal skin. "It reflects the sun coming from the south down into the crevice between two [housing] blocks," explains Holl. "As the sun rises and hits midday, the light is ricocheting down this slot." A watercolor view of a passageway toward the south court house (above) shows Holl's vision of perspectival space. By funneling visitors into increasingly larger spaces, the architect hopes to soften the effect of the block-size scale of the complex.



SHADOW STUDY



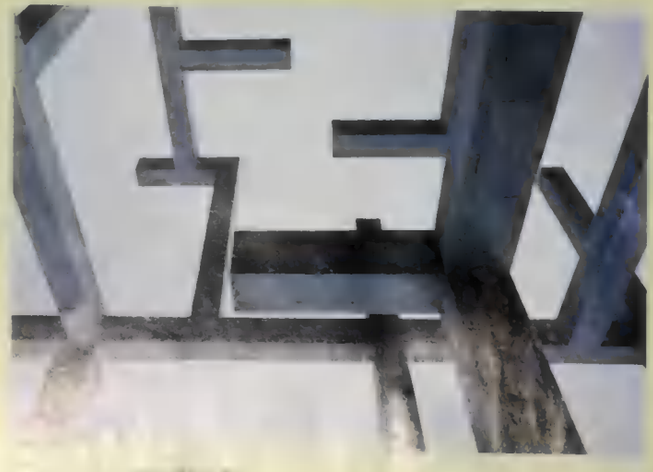
Steven Holl in April, 1995, during one of many construction site visits.

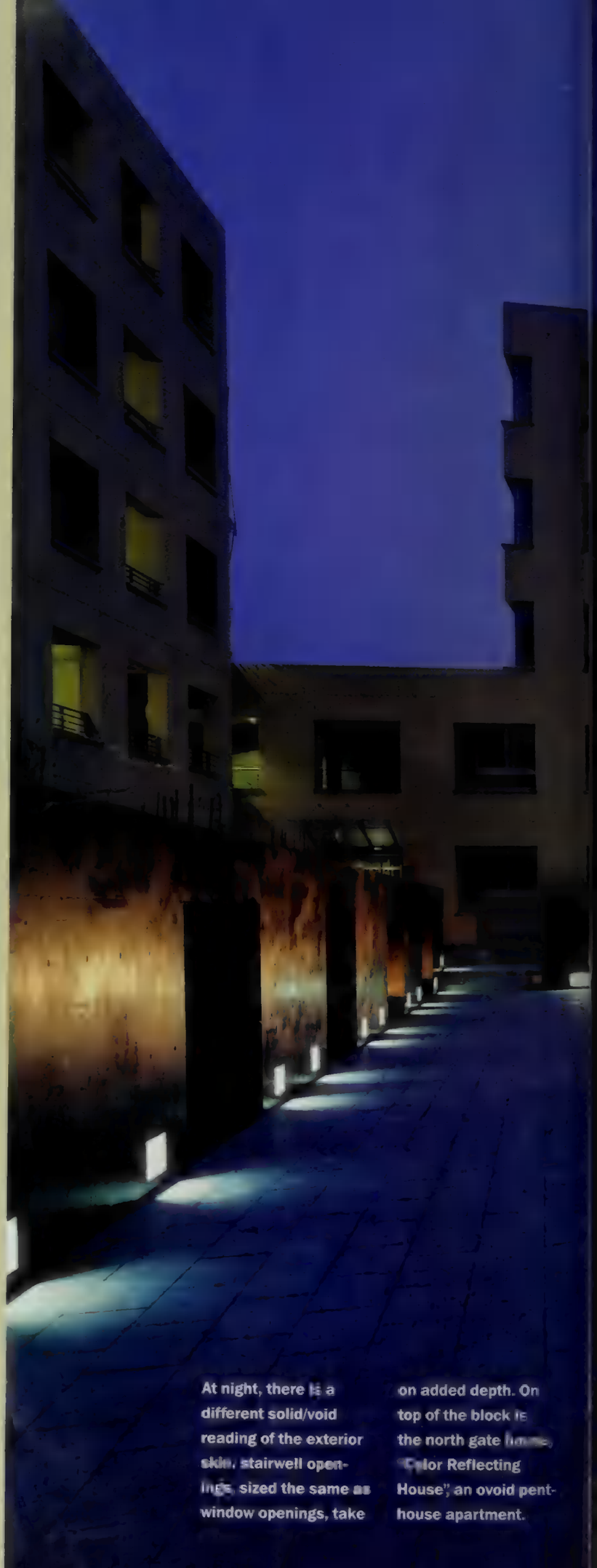
CONSTRUCTION

Once the decision was made to proceed with the project, construction moved at a fast-pace: 13 months for 280,000 square feet. Not only was the construction schedule fast-tracked, but since the project had been on hold for too long, it went virtually from schematics to construction drawings, basically eliminating design development. As a result, certain design issues had to be resolved quickly, on site. As Holl explained to RECORD, some battles between design intent and construction expediency were resolved in his favor—for unlikely reasons.

He said: "Every time they [the client] tried to change something, they couldn't because they didn't have time. For example, 'The House of Nothing' [The south gate house]. They didn't want to build it—this weird thing sticking up. It's a kanji [Japanese writing] character for the word nothing. It's an observation deck. They faxed us that they didn't want to build it because the copper will make toxic acid, because lightning is going to hit it and ruin something, because it's going to send vibrations down into the apartments. We faxed them back that the copper is, in fact, not toxic, that [the structure] is already wired for electrical storms so that it's actually a lightning rod, and that our detail for the rubber mounts won't allow the vibration to travel. So, there wasn't enough time for them to come up with other reasons not to do it."







At night, there is a different solid/void reading of the exterior skin, stairwell openings, sized the same as window openings, take on added depth. On top of the block is the north gate house, "Color Reflecting House", an ovoid penthouse apartment.





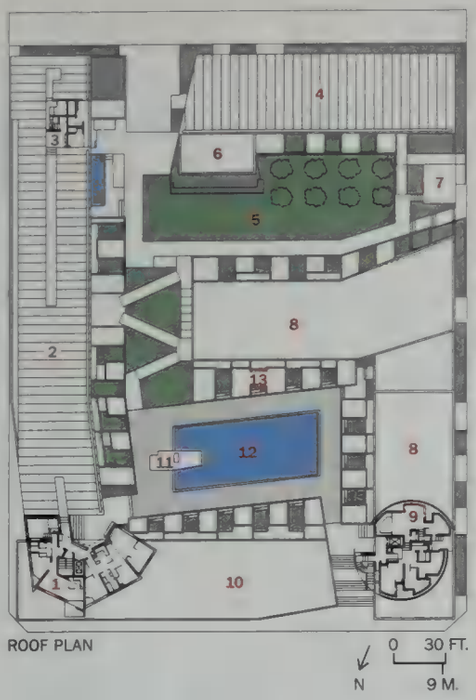






The north gate house ("Water Reflecting House"—opposite top and opposite bottom right) cantilevers over a pool of water. The space, which includes a small tea room, can be used by residents of the complex. The tower-like west gate house, the "Fallen Persimmon House," is a duplex apartment clad in preweathered zinc (opposite bottom left). Holl layered brightly painted walls with panels of perforated metal for the north gate house ("The Color Reflecting House"—opposite bottom left). Oxidized brass gives the exterior of the south court house, named "House of the Blue Shadow" for its interior, a ruddy glow (below).

1. *East gate house "Sunlight Reflecting House"*
2. *East building with pitched roof*
3. *South gate house "House of Nothing"*
5. *South courtyard*
6. *South court house "House of Blue Shadow"*
7. *West gate house "Fallen Persimmon House"*
8. *West building with flat roof*
9. *North gate house "Color Reflecting House"*
10. *North building with flat roof'*
11. *North court house "Water Reflecting House"*
12. *Reflecting pool*
13. *Bamboo garden*









From left: Junichi Kogo, deputy branch manager of Mitsui Fudosan, client; Tomoaki Tanaka of Holl's office, and Steven Holl.

CLIENT PERSPECTIVE

Junichi Kogo, Mitsui Fudosan: "There were many difficult problems. The biggest problem was the exterior corridor [in between apartments]. It was not regarded as exterior by city officials, so we would have to include it inside the floor area of the apartments. In order to exaggerate the "silentness" of the the facade, Steven Holl tried to reduce openness of the facade. It took two months to resolve [in Holl's favor].

Also, another big problem was the [issue of] exterior joints [in the synthetic stucco finish]. Mr. Holl hates joints. Our service people insisted that we have joints to avoid cracks after two to three years. First, we promised [Holl] to conceal the joints. Then we changed our minds, [because] according to our service people, cracks will come out over time. It's [an issue of] market acceptability. If there is no joint, it's much better from a design or esthetic point of view. But housing is an industry of complaints. If it wasn't a housing project, we would have favored the design issues."



A view from inside the "Water Reflecting House" (opposite). It cantilevers over a pool (below left).



The long yellow bar of the housing block turns at the top corner to catch the sun (below right).

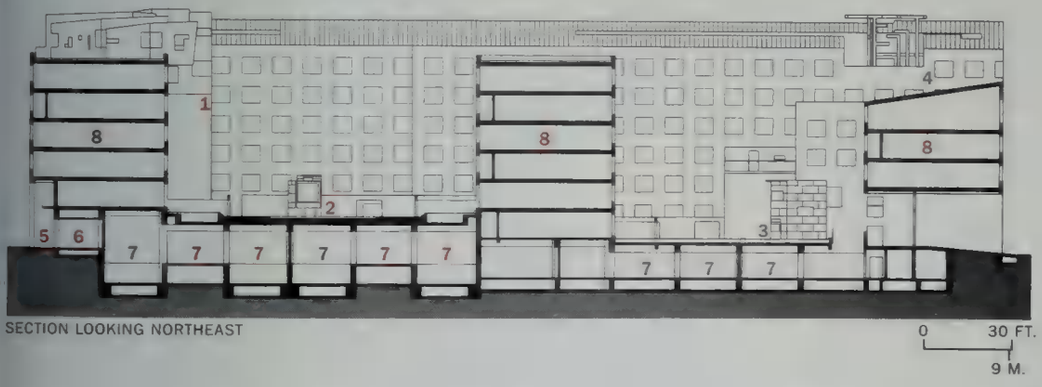




Inside the "House of Blue Shadow" is a meeting room that can be used by residents or rented for public functions.

Apartment interiors have giant pivoting doors and custom light fixtures of cast glass that were made





SECTION LOOKING NORTHEAST

1. *East gate house "Sunlight Reflecting House"*
2. *North court house "Water Reflecting House"*
3. *South court house "House of Blue Shadow"*
4. *South gate house "House of Nothing"*
5. *Pedestrian arcade*
6. *Retail*
7. *Parking*
8. *Apartments*

on both sides, giving American architects jobs in Japan are token offerings that are relatively inexpensive at current exchange rates.

As construction proceeded throughout 1995 and into early 1996, fights continued over materials and methods. Holl went to Japan four times, and Tanaka twice as often. Holl wanted to use integrally-colored concrete as exterior cladding of the "silent" buildings. The coloring process was unusual to the client; the choice was overruled. Instead, a synthetic stucco called Fukko was applied, over Holl's vehement objection. Holl did have some small victories, though, including Kajima agreeing to pay for interior light fixtures of cast glass to be made in Brooklyn—a surprisingly "custom" touch for a large-scale, fast-track development.

MARCH 1996 Holl returned to Makuhari for the dedication ceremony when construction was completed in March, 1996. Many speeches were made including one by client Kogo, acknowledging how much he liked the project. No one was more surprised then Holl. Kogo's statement amounted to a public apology. For Holl, it was a vindication of the project, but of his overall approach to architecture. Everyone Holl worked with in Japan—from Kajima to the client—offers the same appraisal of the architect's vision. "Holl is stubborn," is what Kogo, Ogawa, and Enomoto all say; but with the project complete, and on each of their terms a success, they now all say it with a smile and a touch of admiration. For his part, Holl remains steadfast in his vision: "I knew it would work at an urban level, that's what kept me from quitting." By the end of 1996, almost all of 191 units that were ultimately built (11 more than were originally requested) have been either rented or sold. ■

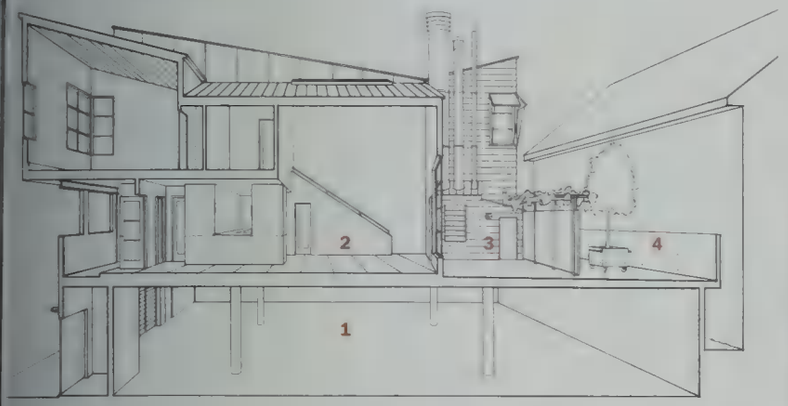
Manufacturers' Sources

Exterior aluminum panels: *Yamaki Co.*
Composite panels: *Rheinzink*
Acrylic stucco: *Magic Coat/Fukko*
Garden wall stain, paints: *Kansai Paint Co.*
Aluminum roofing: *Yamaki Co.*
Painted steel windows: *Tetsuya Co.*
Aluminum windows: *Tostem*
Skylights: *Yamaki Co.*
Painted/vinyl-coated steel doors: *Nihon Funen Co.*
Security grilles: *Testuya Co./ Sainwa Co.*
Locksets/hinges: *Miwa*
Lighting: *Panasonic/Yamagiwa*



Responding to different contexts, solar orientations, and uses, the Tipping Building presents a variety of faces—from the two-story apartment (this page and section opposite page) to the office block (photo opposite).

The TIPPING BUILDING in Berkeley, Calif. is Fernau & Hartman's modern interpretation of living above the store.



by Aaron Betsky

1. *Parking*
2. *Apartment*
3. *Apartment garden*
4. *Office garden*

Just three-stories tall, the Steven Tipping Building is the kind of small-scale, mixed-use, pedestrian-friendly, and neighborhood-focused development that planners these days are trying to encourage in urban-infill situations. "We need to go back to living over the store if we want cities to work," says Richard Fernau, whose firm Fernau & Hartman Architects designed the building.

A hybrid at the edge of downtown Berkeley, Calif., the Tipping Building combines street-level parking and a cafe with a two-story professional office space and a duplex apartment. Most of today's important urban activities are accommodated in its 9,800 square feet: living, working, parking, and cappuccino drinking. Completed just a year ago, the corner building already has helped repair a once-frayed urban seam.

One person who is particularly delighted with the new building is Linda Powell, president of the Henry Hearst Neighborhood Association, who started out as a vocal foe of the project. "I'm a Victorian kind of person and I didn't like the Modern vocabulary," says Powell. "I was very concerned about the bulk. But the building gives a sense of openness, depth, space, and clarity."

The sense of living in a village

For Powell, the lessons of the Tipping Building extend from architectural ones of scale, bulk, and materials to urban ones. "We brought a business back into the neighborhood, where people use the copy shop and the restaurants without getting into cars. We made the neighborhood more lively. We brought back a good dwelling unit where someone lives. We got a public space that is accessible. It has helped enhance the sense of living in a village," she says.

Referring to "New Urbanist" or "neo-traditional" town-planning ideas that are much in vogue these days, Fernau explains, "We took Postmodern urban principles, but not the way they are usually expressed." Instead, the architects let each of a variety of forces—from the demand for a housing unit to the orientation towards the corner, and from the open base to the gestural top—have its own material, shape, and geometry.

"We improvised idiosyncratically on the chaotic urban context," says Fernau. Yet the result is so rigorous that the building almost disappears. "I don't even notice the bulk anymore," says Powell. "I just notice the shade it gives, the light it lets in."

Berkeley, which has the reputation for making development difficult, worked with Fernau to make the building acceptable under its



Project: *Steven Tipping Building, Berkeley, California*
Owner: *Steven Tipping*
Architect: *Fernau & Hartman Architects—Richard Fernau, Laura Hartman, partners-in-charge; Mark Macy, project architect; Scott Donahue, Geoff Holton, David Kau, Turk Kauffman, Tom Powers, Susan Stoltz, project team; Cecilia Hernandez, Susi Stadler, Jessica Rothchild, Michelle Huber, Erica Vonder Hayden, Alexis Masnik, Don Najita, presentation team*
Engineers: *Steven Tipping Associates (structural); O'Mahony and Myer Electrical and Lighting Design (electrical and lighting design); William Mah Engineers (mechanical)*
Landscape: *Ron Lutsko Jr. and Associates*

Aaron Betsky is curator of architecture and design at [illegible] Museum of Modern Art and writes for many magazines. He is the author of several books on architecture and design, including the forthcoming Icons: [illegible] *and* Queer Space: The Spaces of Same-Sex Desire.



urban-design guidelines. The site is in a rather confused part of town, between taller institutional buildings, a mixed bag of commercial structures, and a residential neighborhood. Pat McGowan, the City of Berkeley planner who shepherded the project through the city's approvals process, says, "The Design Review Committee wanted to see a building that contributed to making a gateway here on the edge of downtown. They wanted transparency on the ground floor, a parking entry that was not dominant, a height and bulk that was not overwhelming, and scale-giving elements." They did not, she states emphatically, demand a certain style. "In the downtown, we like to see background buildings but here we looked for the strength of the composition and how it contributed to the context."

THE TIPPING BUILDING IS A COLLAGE THAT DRAWS TOGETHER COMPLEX URBAN FORCES INTO A COHERENT, SIMPLE, AND POWERFUL FORM.

"This building is about how construction works in the 1990s," says Fernau. "It's about how architecture is a compromise between the need to deal with all the agencies, real-estate formulas, client desires, ADA requirements, and all of the other inevitable realities. It is up to us to absorb those realities and draw out the issues that created them in the first place. It is an ad-hoc process, and it gives the building an improvisational quality."

By design, the Tipping Building is a collage that manages to draw together complex urban forces into a coherent, simple, and powerful form. Such a collage costs $950,000 to build or $97 a square foot.

"In some ways it is a miracle that this thing got built at all," says the owner, structural engineer Steven Tipping. After searching for months for a new home for his office, located in an industrial area south of Berkeley, Tipping found some property at the edge of the commercial core. Unfortunately, there was a house on the lot. "Nobody had been able to build here, because of that house," explains Berkeley's McGowan. "Landmarks [commission] didn't want it torn down, and the code said you had to replace the dwelling unit." Tipping's solution was to sell the house at auction, move it to another site, then incorporate a new unit as part of his mixed-use building.

Nearly trapped by all of the rules

Having appeased the city, Tipping got a variance from setback requirements and bulk restrictions. He then had to find room to park two cars for every thousand square feet of office space, provide a commercial use on the ground floor, and house his office. It was not an easy task, he explains: "I was trapped on both ends. I had to provide the parking and the retail, but the bank would only give me a loan if I occupied two-thirds of the building." The overall volume of the building arose out of these numbers.

As if all of these demands—and California's strict earthquake and energy-consumption codes—were not enough, Fernau & Hartman also had a client who wanted "a building that was me, that you would recognize. I wanted it to be subtly about engineering. I wanted a big volume, lots of open space and light, and clearly defined spaces. I drew them a box."

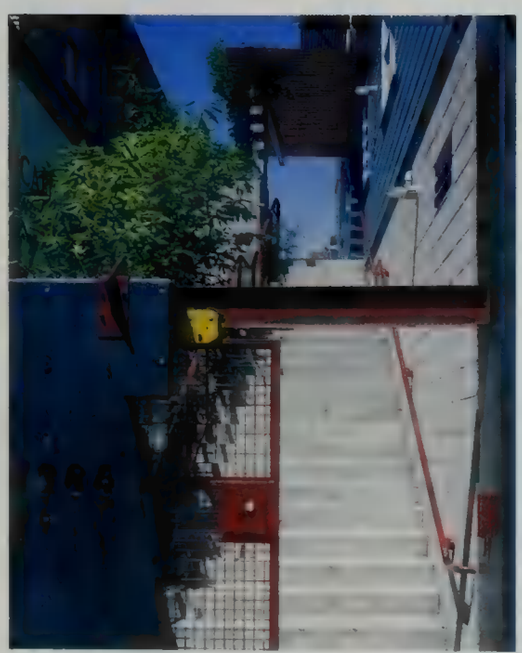
To Fernau, all of these demands brought clarity to his task. He says, "We saw it like a classic school problem—a cafe, an engineer's office, a dwelling unit, tight square footages, a complicated site. We treated the city's demands in the same way. It's all the things we learn about as students. It meant that this building was about first principles. How do you put these different pieces together, how do you express them?"

Their answer was to make a straightforward composition. A poured-in-place, post-tensioned concrete base contains the corner cafe and parking, which you enter off the side street. Above this, a double-height, wood-frame box contains the main drafting room for Tipping's firm, which opens up towards the north "in the tradition of all art and architecture schools." It is clad in cement fiberboard that is meant to pick

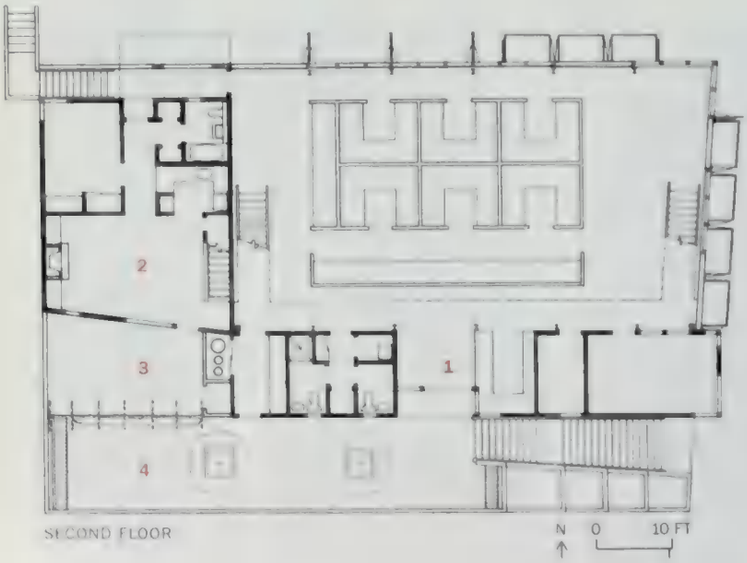
Fernau & Hartman selected materials for the Tipping Building that would allude to neighboring buildings. For example, the cement-board facade of the main office structure (opposite) picks up on the institutional nature of a government office building across the street, while the dwelling unit mimics the wood cladding of many nearby bungalows.

Metal sunscreens, canopies, and gates along the south elevation (right and above) bring a pedestrian scale to the building and help connect it to the street.

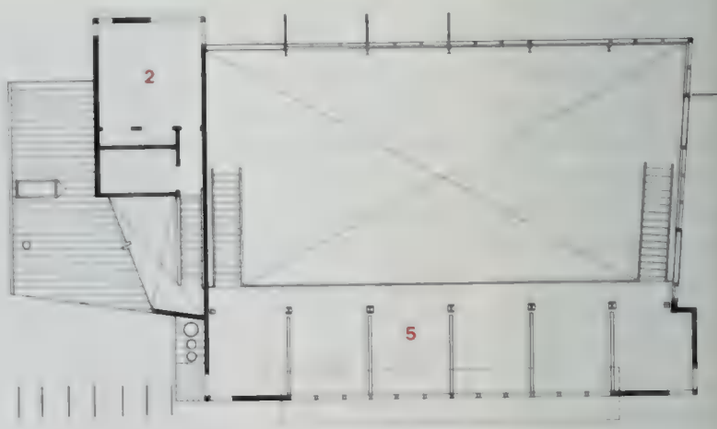








SECOND FLOOR



THIRD FLOOR

1. *Office*
2. *Apartment*
3. *Apartment garden*
4. *Office garden*
5. *Office mezzanine*

up on, but scale down, the palette of the nearby institutional buildings.

The single dwelling unit sits on a side street, and looks like a child's drawing of a house. Its green wood cladding is mirrored by the two-story row of private offices that anchors the drafting room to the south. This row of offices provides thermal mass and breaks down the bulk of the office block. Two outdoor spaces on the southern side of the second level give some relief to the density of this composition.

A rational engineer's esthetic

Once they had set the basic form, Fernau & Hartman worked to "go back to first principles in the way we expressed how the building comes together." From the pour holes in the base to the rain gutters that run right through the drafting room, almost every piece that makes up this building is exposed. Off-centered king trusses soar over the drafting room, metal decking becomes siding in the garden, and screws become decoration. To sum it all up, Fernau designed a conference table with a plywood top that has a pane of glass in the middle, so you can see the painter's scaffolding that holds it up.

All of this clarity of composition and detailing is a direct result of both the client's and the architect's desire to build with what Fernau calls a "rational, engineer's esthetic." For McGowan, it also "breaks down the scale of the building, gives you elements you can read."

The emphasis on parts and detailing has done more than just domesticate the Tipping Building. It has diffused the Modernist appearance inherent in the materials and forms of the building's architectural vocabulary. All of the parts and pieces made it acceptable, "so that people look at how it works," as Fernau says. This certainly is the case from Linda Powell's perspective: "It has become a kind of destination in the neighborhood at the beginning or end of the day. It's the kind of place where you can sit for a few hours with a book. The reveals give some depth. It has a very Mediterranean feel, maybe not in the look, but in how it functions, with a set of outdoor rooms." ■

Manufacturers' Sources

Shiplap siding: *redwood*
Fiber-cement-panel siding: *E-Flex by Eternit*
5-Vee crimp galvanized steel roofing: *Western Metal Building Products*
1.5-inch aluminum windows: *U.S. Alumir*
Green-tinted glass: *Solex*
Locksets: *Schlage*
Hinges: *Hager*
Closers: *Norton*
Perforated corrugated aluminum acoustical ceilings: *Reynolds*
Cabinetwork and woodwork: *custom by Fernau & Hartman*
Paint: *Cabots*
Radiator: *Runtal*
Interior ambient lighting: *Holophane, Well-Made, LSI, Lightolier*
Downlights: *Reggiani*
Exterior lights: *Stonco*

Steven Tipping's engineering firm occupies 4,010 sq ft of space on two levels (opposite). Operable windows and fans, as well as large, north-facing windows and low-energy lighting, allow the building to operate without air conditioning. Exposed off-set King trusses and steel columns help convey an engineering esthetic, something the client specifically requested.

Corner windows in the 830-sq-ft apartment (right) help expand the unit visually, while a small garden (below) is a treasured urban amenity.







Gray-green precast panels and silver-gray terne-metal cladding on the new buildings of the Phoenix Art Museum pick up the subtle, dusty colorations of desert shrubs like Palo Brea.

Night-time view of Phoenix, from Camelback Mountain looking southwest (opposite).

CRITICISM: Can Williams and Tsien's PHOENIX ART MUSEUM help this sprawling desert city find its edge?

by Michael Sorkin



Night flying into Phoenix—inky emptiness abuts the grid of lights, the desert lapping at the edges of town. As the plane circles and drops to land, the glimmer of energy seems to spread to infinity and a paradox becomes visible: growth kills the resource that makes the city great. Climate and landscape are sunk in a miasma of development, sprawl without end. Sufferers fleeing their allergies find them again as the city urbanizes itself out of health.

The growth of Phoenix has been rapid, its settled area attenuating even more rapidly than its increasing population, the very formula for sprawl. Between 1950—when the town had a scant 100,000 people—and 1980—when it hit its first million—the area of Phoenix grew from 117 square miles to 450, almost three times the rate of population growth. Today, the inhabitants of Maricopa County—Phoenix and a brace of contiguous municipalities including Mesa, Tempe, Scottsdale, Chandler, Peoria, and Sun City—now number near 2.5 million, over 60 percent of the state's people. Arizona is incredibly urbanized: Phoenix is now among the 10 largest American cities.

There is a certain perverse environmental logic to such concentrations. The desert has a low bearing capacity for human settlement: its eco-systems are fragile. Concentration could be considered conservational by a simple math: the less of the desert covered, the more of it is preserved. For all their sci-fi scale, this was the message of Paolo Soleri's daft "Arcologies." This, too, is the message of the spare pattern of the site's original inhabitants.

Because of the construction of the Salt River Project at the beginning of the century and the Central Arizona Project in the 1980's, and because of enlightened restrictions on the use of groundwater, Phoenix is well provided with water. Since there is little anxiety about future supply, water is not a major regulator of growth. Indeed, the region has a history of irrigation—back to the canals of the Hohokam Indians. Phoenix's early modern character was also agricultural, dominated by a water-intensive cotton and citrus economy. Ironically, the replacement of

Michael Sorkin, a contributing editor to Architectural Record*, was the architecture critic of* The Village Voice *for 10 years. Currently he has an architectural practice in New York City.* ▪

Project: *Phoenix Art Museum Phoenix, Arizona*
Architect: *Tod Williams, Billie Tsien and Associates—Tod Williams, Billie Tsien, principals-in-charge; Marwan Al-Sayed, project architect; Vivian Wang, Martin Finio, Betty Chen, Matt Baird, Peter Burns, design team; Peter Arnold, David van Handel, Erika Hinrichs, Yoshiko Sato, assistants*
Associate Architect: *Lescher and Mahoney/DLR Group—Bryce Pearsall, principal-in-charge; George Rice, project manager; Bob Watkins, landscape*
Engineers: *Robin E. Parke Associates (structural); Ambrosino, DePinto & Schmeider (M/E/P)*
Consultants: *Lescher and Mahoney/DLR Group, Debra Burnette Landscape Design (landscape); Fisher Marantz Renfro Stone (lighting); McKay Conant Brook (acoustic); Chapman Ducibella Associates (security); Thinking Caps (graphics); 3/D International (project management)*
General Contractor: *Johnson Carlier*



The Phoenix Central Library by Will Bruder opened in 1995 (above).

The 1993 Arizona State University law library by Scogin, Elam and Bray, of Atlanta (below).

Antoine Predock's 1989 Arizona State University's Fine Arts Center (opposite).

agricultural uses by urbanization has resulted in a net decrease in demand for water. The requirements of even luxurious lawns do not rival the thirst of cotton. Phoenix has too much water: the sense of abundance induces a failure of limits.

Economy is also character. In Phoenix, growth is centered in a healthy high-tech and service sector and around those qualities of climate and culture that continue to attract waves of retirees, vacationers, and "snowbirds"—the large migratory population that arrives in the winter, swelling the city by 30 percent. The distortions of a population that is constantly increasing has economic consequences beyond growth. In their first year, new arrivals spend sums equivalent to six years spending by a standing resident. The culture of immigration adds a permanent fizz to the economy that a more stable population would not, another link in the chain-letter economics of endless growth. No coincidence that savings and loan manipulator Charles Keating made his killing in Phoenix.

This economy of growth has shaped both the city's self-image and official planning practice for years. Outside of several affluent areas, there are few curbs on either the character or the pattern of growth, and the city has expanded almost exponentially and in remarkably consistent form. Although impeded by a few natural barriers and by several large Indian reservations (which have yet to get hip to their own profitable possibilities in development), the desert is wide open for encroachment and the city gives every indication of being ready to encroach.

Although the official planning philosophy has changed from a simple growth formula to a strategy of "urban villages," the effects on the ground are negligible. The experience of Phoenix is of a continuous field of low-density development with few internal edges. Phoenix is filled with gaps that are often the product of developer "leapfrogging" to avoid the run-up on land adiacent to existing developments. The differences among these towns are largely notional—physical fiction. Phoenix has become the dreaded polycentric automotive metropolis.

While planning styles may change, the structure seems forever: [illegible] are the basis of the city's urban culture. [illegible] miles out of town, heading for a hamlet called Carefree, the otherwise undeveloped landscape is marked with optimism, signposts hailing the "future site of 19th Avenue, future site of 20th Avenue, future site of 21st Avenue...."

This vision of emptiness awaiting order fixes a historic tension. Arizona mixes opposites. The state's schizoid politics reflect the old conflict between wilderness and development, between styles of order, yielding John McCain; Bruce Babbitt; and Barry Goldwater, former department store magnate, Air Force General, founding father of American neo-conservativism, and defender of Gay rights—a liberal in the old-fashioned way. Arizona is also the first American state to have female chain gangs.

Arizona's historic immigration was comprised of people seeking not just freedom and opportunity—the standard-issue myths of the frontier—but also of those seeking health and physical invigoration. If the Arizona economy grew on the fabled 3C's—cotton, citrus, and copper—it was soon overtaken by a stream of health-seekers and quickly evolved a vigorous spa economy. An informal survey suggests that the service most frequently advertised on the billboards of Phoenix is chiropractic: the alleviation of psychic and physical aches and pains is the promise of the Southwest. The fantasy of paradise is everywhere. "Paradise Valley" is the city's self-designated soubriquet. And the welcome-signs at the city's edges are emblazoned with the slogan: "Best Run City in America." Phoenix is a dream of order.

The grid is the physical expression of America's historic fantasy of paradise as order. It is also the primal scene for our partisan wars between density and extent. The grid represents the idea of democracy as pure extent. Thomas Jefferson's vision was not simply of a mathematical equality achieved through the continuous subdivision of an endless territory, but of a citizenship guaranteed by private invisibility. After all, if the grid was large enough, each citizen could possess a private horizon, his neighbors out of sight, her own territory effectively boundless.

Reaching the coast (and building Los Angeles) compromised this vision and the big re-migration from California back to places like Arizona is an effort to reclaim the dream of non-interference. A sense of utopia—however devoluted—continues to shape Phoenix's take on place. The fantasy of self-realization hangs like dust in the Arizona air, often taking form as architecture. Even the rocks seem to be buildings in the state of becoming. And, we all know Arizona's historic affinity for utopians at the high-end—architectural experiments from Frank Lloyd Wright's





Taliesin to Soleri's Arcosanti to the Biosphere to Sedona. Not simply laboratories for new architecture, these have all been elective communities. Arizona is a state occupied by choice.

Of course, one person's utopia is another's forbidden, gated community (or "armored cocoon" in the appalling words of "futurist" Faith Popcorn). The most extraordinary of such intentional community projects in Phoenix is developer Del Webb's Sun City, the famously successful retirement town at the city's northwest corner, its radial plan straight out of the 18th century. Sun City embodies the fundamental conundrum of democratic space by being both elective and restrictive, limited to older people (membership in the American Association of Retired People is 100 percent), forbidden to children. Sun City is also a remarkable reduction of the spatial structure of Phoenix itself. Pared of the distorting demands of employment (it's a retirement community, after all), Sun City is limited to residence, recreation, and consumption. The transit system is golf carts.

This is an important clue to the fate of utopia and to the current default mode of contemporary American urbanism. The leading post-democratic utopia is the city of segmented consumption. Phoenix is spatially organized like an inverted piece of market research. Each consumer sits in a single house on a piece of turf (there aren't even any dingbat apartments in Phoenix!): malleable monads, test audience for the new age. The analytic tool that unravels this organization is the advertiser's, and Phoenix, with its unconfused demographics, is a nearly ideal field of operation for contemporary consumption. Sun City has reabsorbed this mode by utilizing consumer research into the preferences of its residences as a main mode of planning. Why vote?

Further ironies. If the Phoenix model is of a grid of homes focused on a series of malls, this suggests that the "urban village" may be more relevant than first blush reveals. The pattern of such local centers is clear within Phoenix, more so for the city's remarkable underdevelopment in freeways (or any other form of transportation save cars in the grid). Once more, too, the city has produced the seeds for a rational and delightful maturity. After all, the agora was also a point of purchase and a golf course can be as green and trodden as Central Park.

How to build in such a paradise? Is it possible to look beyond instrumental views of the city to a more popular sense of a *genius loci*?

Is it possible to exceed the kind of creative geography in which the "Club Tribeca" is to be found in a shopping mall out of Georgia O'Keeffe or to eschew the hedonistic strategies of "climate control" that yield rose gardens and top-down driving with the air-conditioning blasting?

The answer is surely a provisional "yes."

The choices are nowhere clearer than in Scottsdale where I stopped one morning for souvenirs. For all its raw suburbanism, Phoenix remains in love with the "look" of the Southwest. Scottsdale, with its streets of Native American *tschokerias* and its galleries of Western Art, is a point of dissemination for the sensibility, source for the decor of 10 million bleached-out living rooms. And people are into it: one sees remarkably few of the mock-Tudor or mock-Loire *haciendas* one would expect in Los Angeles or Orange County. However tacky the expression, there's terrific consensus and literacy about this version of the city's visual roots.

Negotiating with such an entrenched sensibility requires astute navigation between nature and culture. As we continue in recovery from the mimetic regionalism of the Disney cadre, the search for a healthy architecture resumes. Which brings us back to the desert.

The best desert architecture—from the Anasazi to those obsessive geometers, the Navajo and Frank Lloyd Wright—treats the desert as a cause, not a trope. The BTU-addicted ranchero with the three car garage and the xeriscaped front yard is the Benetton version of desert building.

SUDDENLY, PHOENIX HAS BECOME A SHOWCASE FOR MEDIUM-SCALE MODERN ARCHITECTURE.

And yet, it is *some* version, trapped in a contradiction but game nonetheless. A meaningful desert architecture has many tough choices to make in the middle of a city of two million.

Suddenly Phoenix has become a showcase for medium-scale Modern architecture, spurred by the confident expenditures of a culturally underdeveloped city enjoying its fortunes, ornamenting itself with libraries and university buildings, museums, malls, concert halls, festive marketplaces, skyscrapers, and ball parks. The ambition can be raw—the TV ads for the local opera feature a Julia Roberts lookalike in a "Pretty Woman" fantasy. Phoenix's luck is in the timing and in its liberal and remarkably consistent patronage of architects of real quality. And, most of the resulting architecture takes the investigation of place very seriously.

The recent spate of publicity notwithstanding, I was unprepared for Will Bruder's superb public library. It's a confident and disciplined piece of work, imposing without being overbearing, lightly constructed with no sacrifice to solidity. After a dark blue passage to the center, space rises through a bright, generous shaft, decompressing towards the top, blossoming into a vaulted reading room, glazed at either end, its roof supported by a graceful, ingenious, and droll system of posts and cables. The view south frames the skyline of the Phoenix downtown—or invents one, is more like it. While the downtown has a certain presence as a navigational icon (like its natural analogue, Camelback Mountain), it is simply ragged as a tectonic. The near vista from the library, though, gives this collection of generally mediocre buildings a presence and stature of civic



dimension. This ocular contribution to the city's collection of views of itself—the foregrounded hall, the middle distant center—is as remarkable as it is crucial to the sense of the metropole.

From outside, the building is a big lump of corrugated copper, almost geology, formless as a lode. It has the proportions of a vertically exaggerated suburban department store, initially a little graceless, soon more challenging, and finally very satisfying. And the library does have something of the atmosphere of a hushed and hip emporium: great signage, well-lit displays, glass elevators, atrium, good access to the freeway. It's a great scale—the scale of concert halls and retail, the scale of both urban and suburban monuments, dignified and big, but accessible. Bruder's library does it with no spurious clarity or denatured heft.

Another library, Scogin, Elam and Bray's fine law school building on a highly trafficked site at the edge of the Arizona State University campus [RECORD, January 1994, pages 78-85], also reflects on but does not pander to the desert, working within a narrow palette—extremely elegant. There's a seismic riff in the form of a fissure down the building's middle and the color is sandy and pale Dryvit, the adobe of post-modernity. The building responds to the sun both optically and thermally. Its geometry, irregular but comfortable, is a fine catcher for shadows. North-drawn light floats gently into the reading rooms. Spaces are high, airy, cool-looking, though not dark. My favorite region in the building is its fish-shaped service area. From an arching roof supported by graceful composite trusses, ducts and lights are hung on a plethora of cables that streak through the low-lit room like sun rays piercing clouds.

Across the campus, Antoine Predock's art museum has an architecture at once more local and more thermally histrionic. In massing, the building evokes traditional desert tectonics at a remove comparable to that between Le Corbusier's villas and the prismatic Mediterraneity of their origins, and recalling modernity's capacity for happiness in the heat. The building, entered via a descent underground, is about thickness and darkness, exclusion of the sun in its grotto-like interior and in the modulations of shade that returns the building's outer surfaces to use.

Down Central Avenue—the Wilshire Boulevard of Phoenix—from Bruder's Library is the Phoenix Museum of Art, just expanded by Tod Williams and Billie Tsien. The comparison to Wilshire, classy boulevard of towers, is not gratuitous: The new museum is a smaller, flattened version of the Los Angeles County Museum of Art (LACMA) expansion. Like the Los Angeles project, the Phoenix Museum conceals a bland (though not dysfunctional) original, and reorganizes entry and circulation through a dramatic portal. Williams and Tsien have rehabilitated the Museum's public face and introduced another, grander one, with a range and scale of spaces. Like the Bruce Goff-designed addition at LACMA, there's even to be a curvilinear excursus, an enormous concoid fiberglass baldachino for sculpture (that awaits funding), cooled by mists in summer, a lateral displacement of a centralizing dome. *(text continues on page 97)*

THE EXPANSION OF THE PHOENIX ART MUSEUM IS A SUBTLE EVOCATION OF SOUTHWEST MOTIFS, ABSTRACTED TO THE BORDER OF SIGNIFICATION.





The western facade, with the two large wings sloping in towards the entry court between them (opposite top).

The Central Avenue entrance at night beckons to car passengers and the few pedestrians found in Phoenix (opposite bottom); most museum goers will enter the building from the courtyard side, closer to parking.

Spears of green glass—translucent vigas—admit western light into the Museum's Great Hall on the sparsely windowed Central Avenue facade.

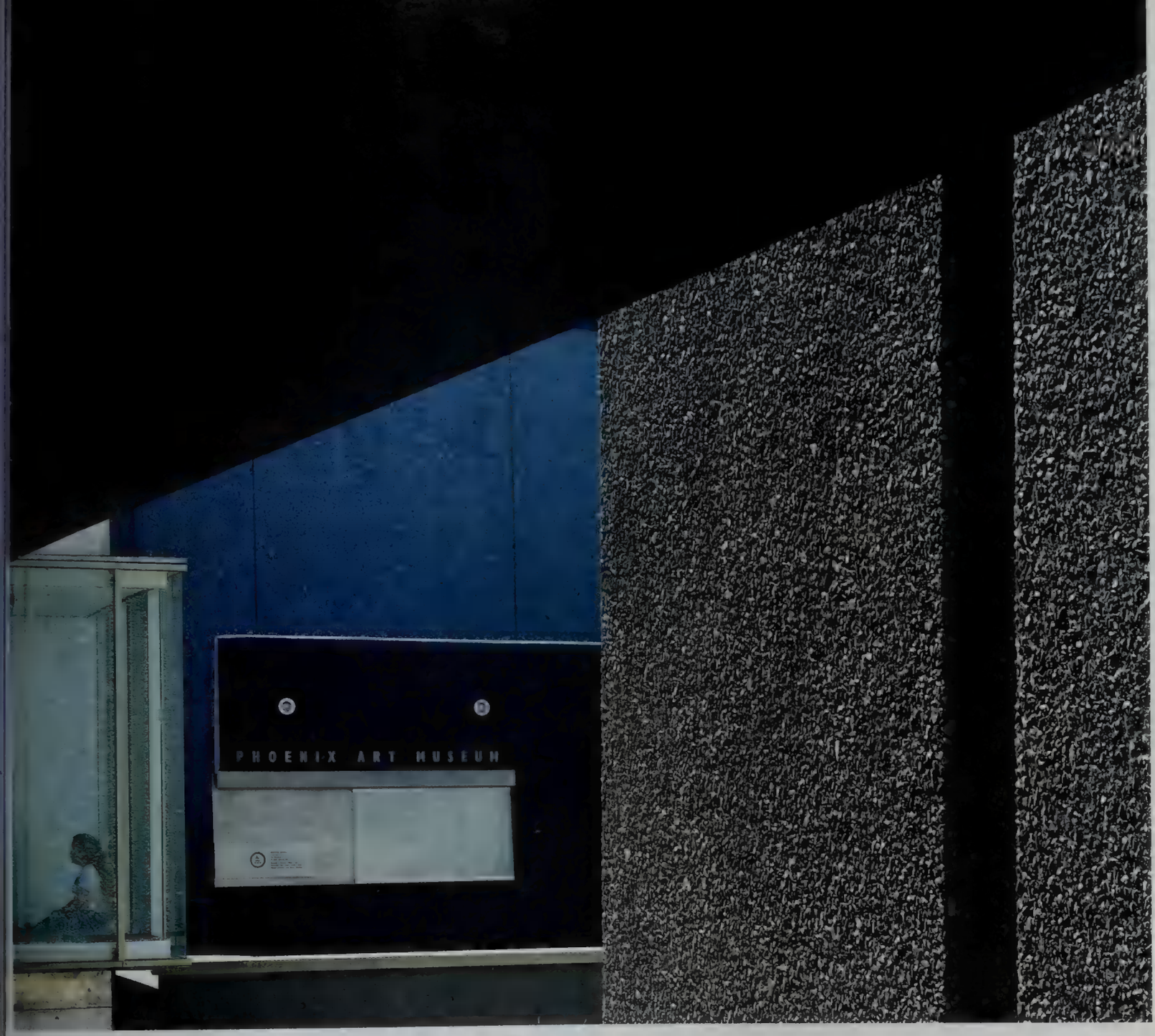




The west-facing museum entrance ramp is spanned by the terne-clad bridge connecting the two new wings along Central Avenue. Within, visitors walk up a gentle incline from the upper level of the Great Hall to a gallery overlooking the current exhibition space. Eccentrically placed windows frame views.

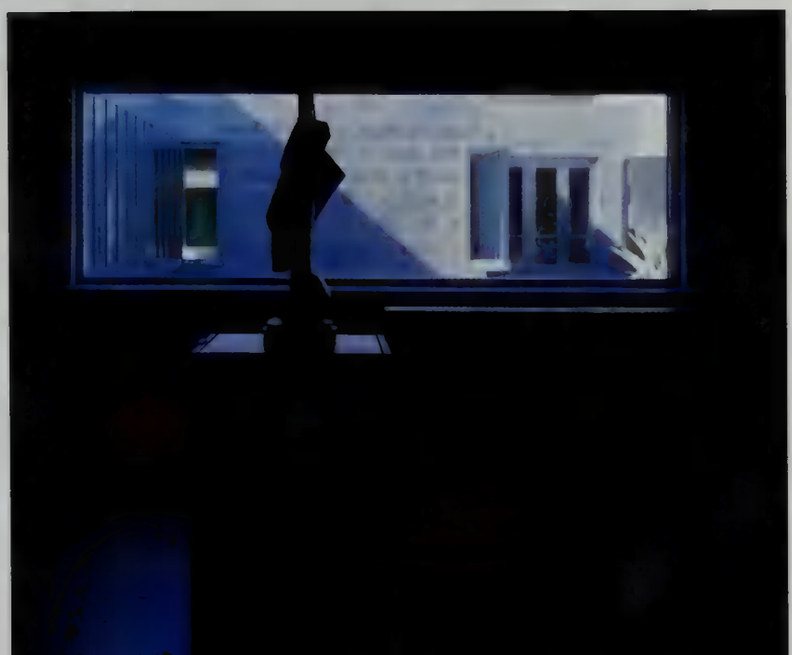


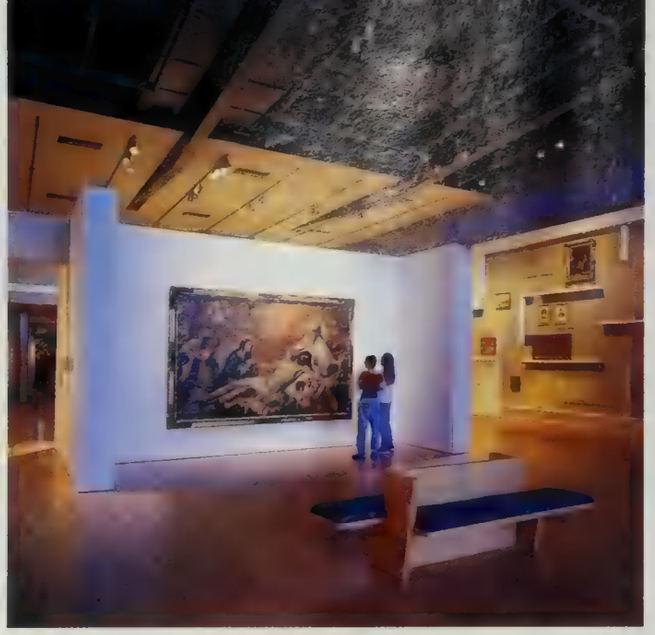
East-facing glass walls connect the gallery of the Great Hall with the existing courtyard. Eventually they will overlook the elongated fiberglass dome of the planned Sculpture Pavilion. The metal-clad wing to the rear forms part of the main entrance lobby and circulation space.



Looking past a corner of the entrance lobby with Frank Lloyd Wright-like mitered-glass windows towards the courtyard kiosk. The huge precast panels that seem to root the building in the soil are faced with Glacier-green quartzite aggregate that comes from Utah (above).

Looking out through one of the dozens of unexpected vignette-framing windows from the new gallery to the courtyard (right).

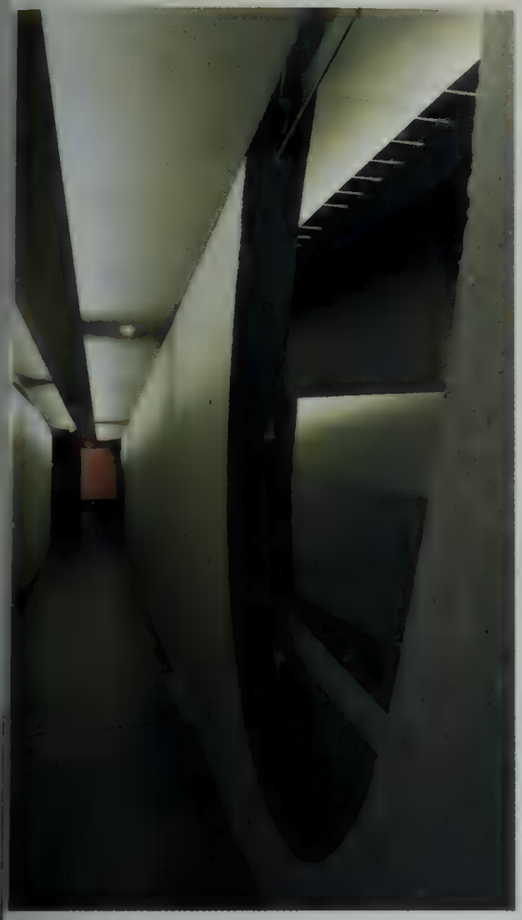


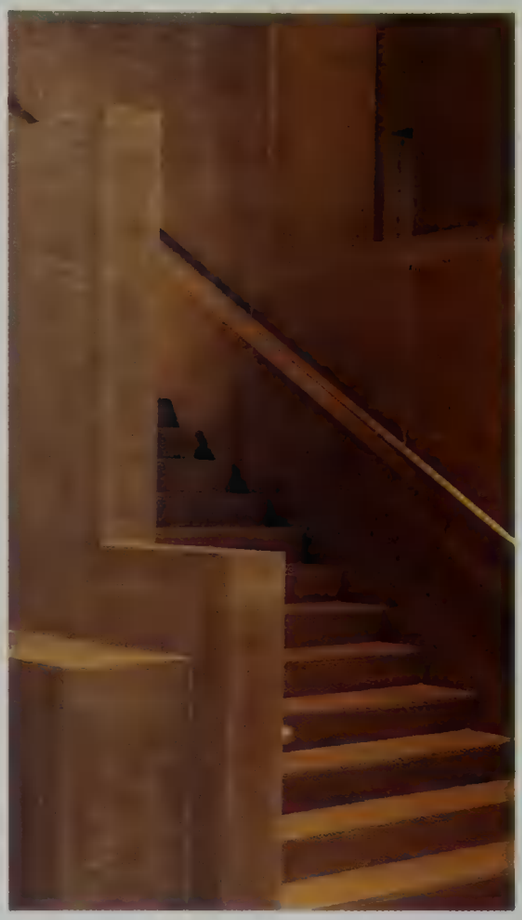


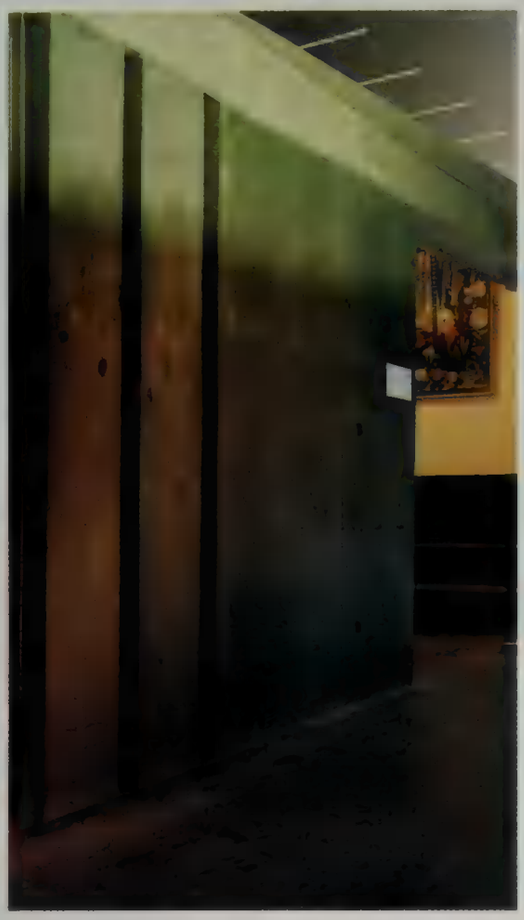
A Spanish Colonial gallery with one of the maple-veneer plywood benches designed by Tod Williams, Billie Tsien and Associates. The double-sided bench, named "Twisto," has a storage pocket within the seat back to hold exhibit brochures and catalogues (left).

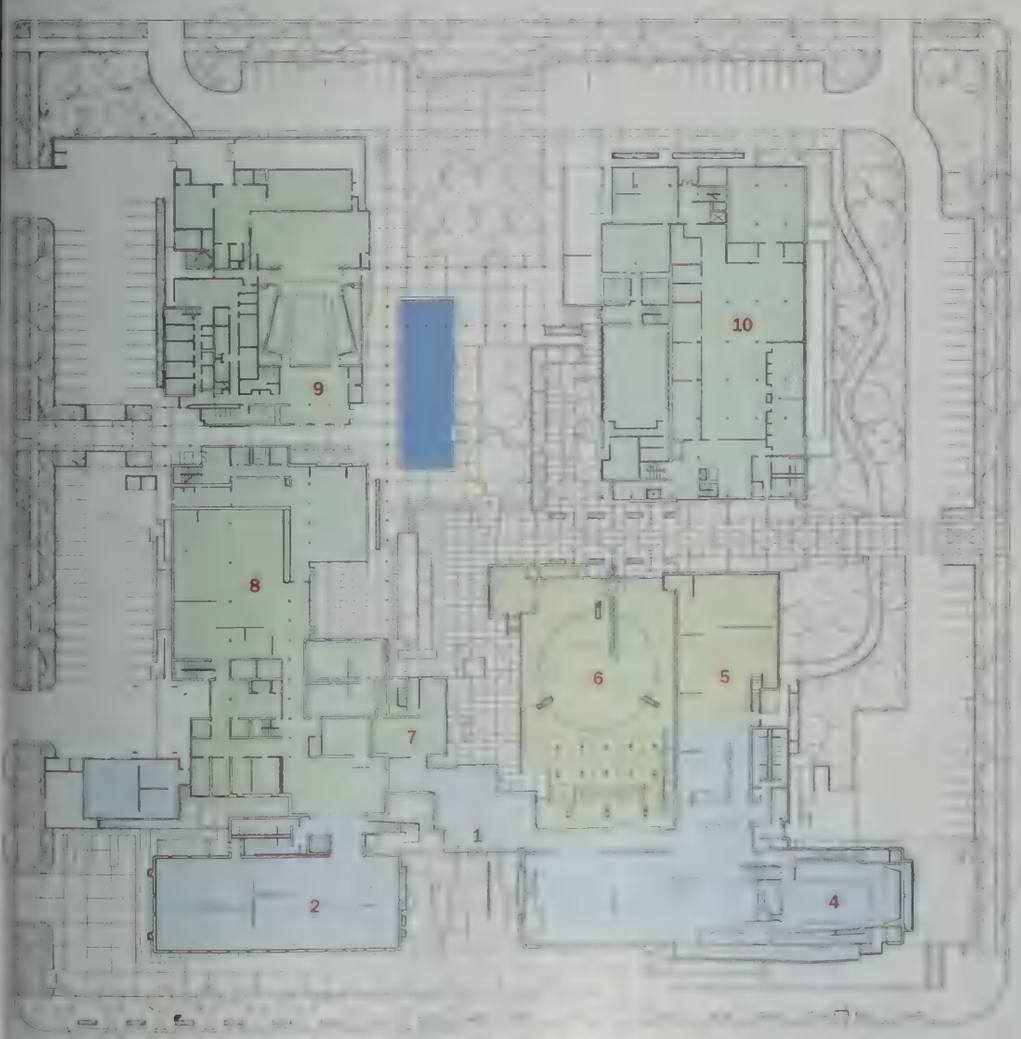
Intended to be a grand public space for fund-raising events and civic galas as well as a permanent exhibit space, the Great Hall has luxurious materials not found in the rest of the Museum. The floor is Yukon Silver Limestone from New Mexico (below).

The pedestrian experience: The poured-in-place gray cement ramp wends from the ground-level Great Hall up to the Modern galleries and down to the partially below-grade lecture hall. The stairs lead up to the Art of Our Time exhibit (opposite).









1. *Entry*
2. *Changing exhibits gallery*
3. *Great Hall*
4. *Auditorium*
5. *20th century gallery*
6. *Sculpture pavilion/court*
7. *Museum store*
8. *Asian art*
9. *Community theater*
10. *Administration/ education*

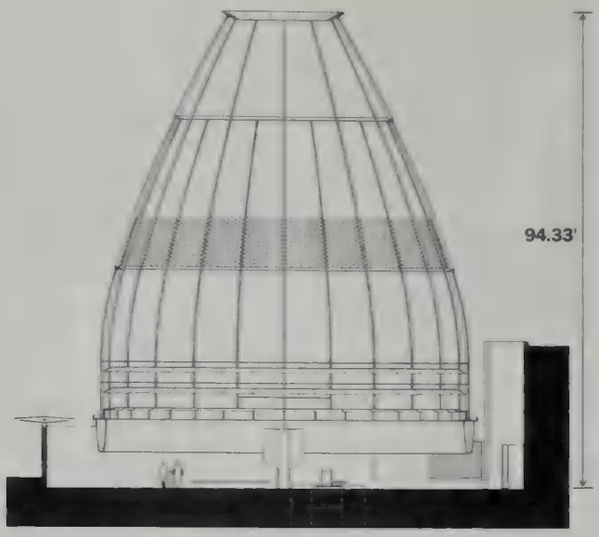
The site plan shows the total extent of the Phoenix Art Museum complex—renovation, new construction, and yet-to-be. The Sculpture Pavilion, as yet unbuilt, nestles in the "L" formed by the old library, renovated to a new research facility and museum offices, and the experimental Little Theater.

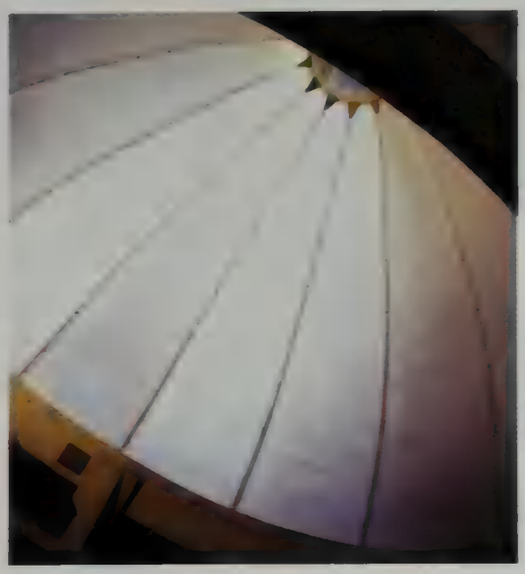
FIRST FLOOR PLAN



Ascending a stair of dark-gray integrally-colored concrete, visitors catch a glimpse through the slotted wall. Punched-edge baffles at the ceiling shield fluorescent tubes.

e translucent fiber-ass Sculpture avilion, unbuilt but own here in model, is esigned as a giant oating lantern that will come the preeminent mbol of Phoenix. erforations in the ast-resin panels draw e warm desert air pwards, to be cooled y a water mist and fall ack down to earth.





The expansion of the Phoenix Art Museum is a subtle yet nmistakable evocation of motifs of the region, abstracted to the border f signification. The building is almost Spanish. Massive, pre-cast walls re battered in the load-bearing profile of adobe and topped with a metal ornice. Like roof beams through a mud wall, slabs of green glass pene-rate the upper portion of the panels, transmitting not load but light: day n, night out. A frieze of circular indentations along the wall re-evokes the hape of the beams. A courtyard will come.

The parti is Classical: symmetrical wings on either side of an ntry court. Unfenestrated elevations have a long, pueblo proportion. The precast panels, though, eschew the usual buff, and are colored instead vith a local aggregate in a lovely green, somewhere between celadon and ime. Both Bruder's copper and William's and Tsien's aggregate are logical xpansions of the local envelope of tonality without losing the color of he place. The gap between the two wings forms the museum entrance. t's overflown by a galvanized metal bridge that descends from left to right bove the axis of entry, suggesting a less-Classical pattern of circulation. That metal-clad ramp is part of a narrow gallery that begins in the small, second-level space of the left-hand wing and gently descends across the ntry, passing out and into a small interior terrace overlooking the gallery o the right.

The right-hand wing, which contains a beautiful new audito-rium as well as gallery space, also has a more complicated set of ramping galleries that combine necessary circulation with more room, producing a composite, level-bending, space "within the walls." Williams and Tsien have a very refined sense of incident. Their ability to produce such com-plex movement within a project of relatively modest scale is by use of a canny, elegant plan and by beautifully developed events en route—land-ing sites and overlooks, changes in color and materiality, flashes of light through apertures ranging from windows to glazed form-tie holes.

Again, contrary to the expectations set up by the semiotics of the exterior, the two new halls of the addition are spanned the long way by three deep trusses that frame two graceful sections which in turn have produced two elegant ceilings covering two rooms of very different char-acter—with the most delicate inflections of material and detail. The big room on the left is a loft: a little provisional feeling, sheet-rocked and New York Cityish, the setting for changing shows. It has a techy, movable mechanical ceiling which adds to the raw, downtown feeling of the space as does the industrial-strength length-wise span. The floor is wood and finishes are plain and responsive to the cycle of sh[illegible] partitionings and demolitions that will accommodate changing [illegible].

The room on the right is the museum's ceremonial great hall—the site of openings. Here, the palette is richer, warmer, more local in tones. The detail is also more elaborated. The floor is stone and the folded ceiling is superb: roughed plaster, wood, paint, and a celestial spray of lights and HVAC registers. The proportion of the room is unusual—slightly wide—a space which has stayed with me. Eventually, this room will connect to a new set of galleries and open onto the new courtyard.

Phoenix abounds with architectures which make their peace with the desert. But this again evokes the conundrum of the town: Addition is subtraction. An answer, though, is suggested by the siting and agendas of these recent projects. Rather than colonizing new territory, each elaborates existing densities—the campus, downtown. And surely such considered densification is both the social and environmental key.

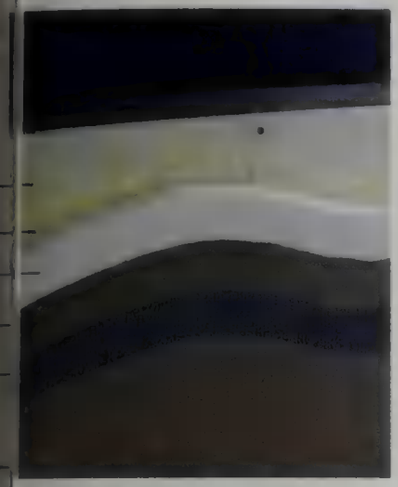
What will become of Phoenix? The worst fear is that it will coa-lesce into an endless substrate of urban nothingness somewhere between L.A. and Orange Country on the devolutionary family tree of the "Western Town," solving the riddle of density and extent via totally liber-ated sprawl. Or, perhaps, there will be a drawing back from the fantasy of no limits and in its wake the growth of a more genuinely loving relation to a place that is now at the point of passing the limits of its own sustain-ability. Perhaps this will allow Phoenix to find its edge. ■

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Limestone lobby, Great Hall floor: *supplied by New Mexico Travertine*
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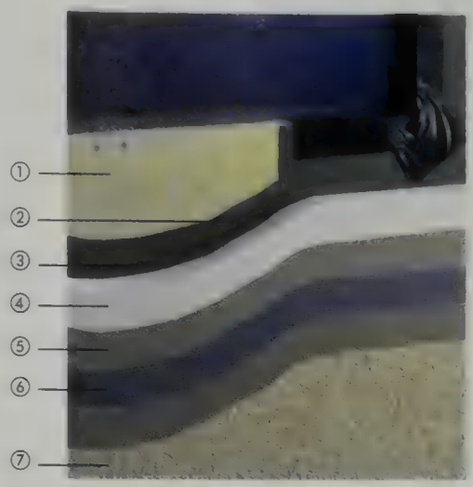
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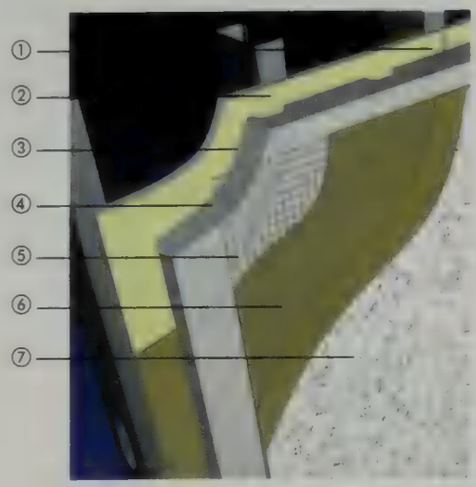
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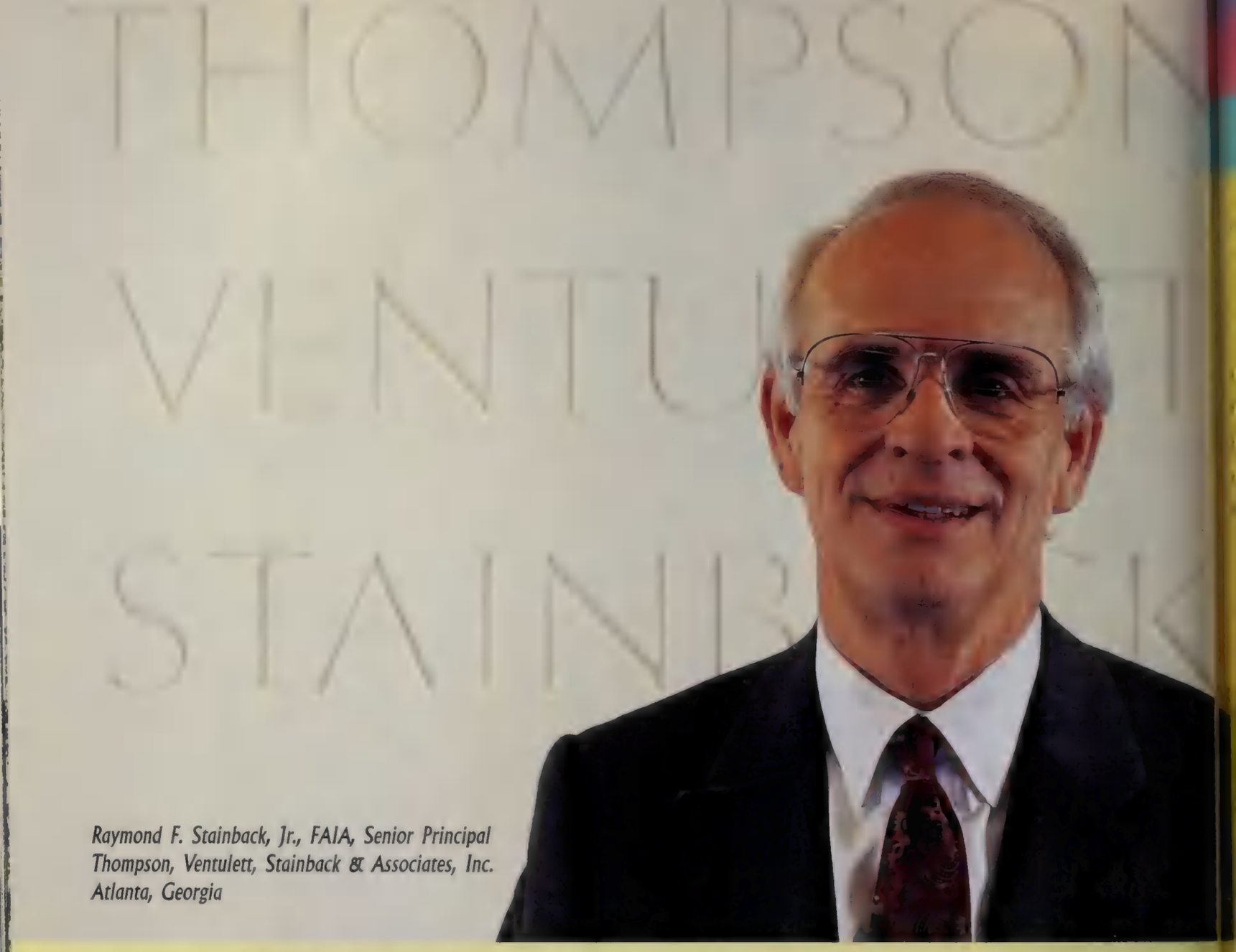
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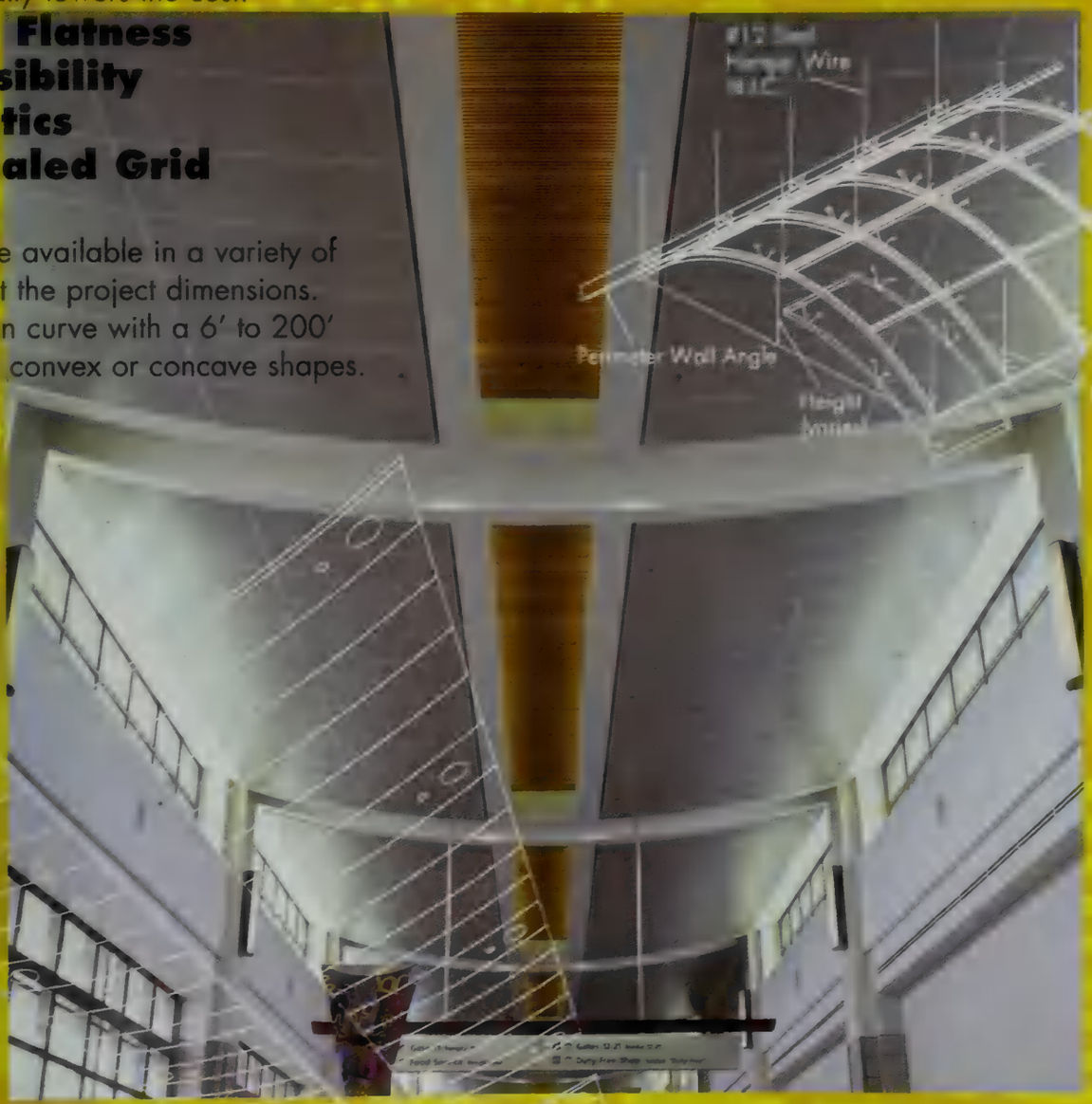
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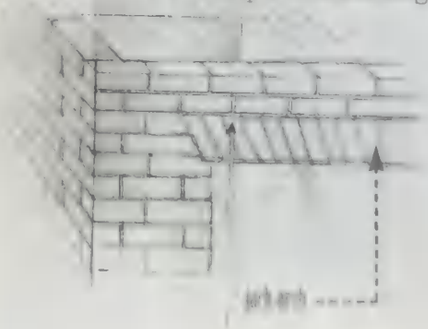
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Lessons from America's Best-Managed Firms

LOOKING TO IMPROVE YOUR PRACTICE? OR LOOKING FOR A BETTER PLACE TO WORK? YOU MAY FIND SOME ANSWERS HERE.

by Charles D. Linn, AIA, and Clifford A. Pearson

Who says nice guys finish last? The truth is that in the 1990s the firms with the best numbers are often the ones that pay their associates well, offer generous benefits packages, and give to their communities. Not surprisingly, these are also some of the most attractive places to work.

In a profession where stories of cavalier management practices, low pay, and grueling hours are part of the lore, and where marketing was once a dirty word, a growing number of firms are now making good management an essential part of their mission. In the process, they are creating important jobs for architects with skills in marketing, business development, and project delivery. Design is no longer the whole story. To attract the best clients and employees, architectural firms are sharpening their business skills.

None of this is rocket science. All of the methods and practices described in this article are currently in use by well-managed small, medium, and large firms around the country.

Talking to architects and management consultants, one hears a lot of buzzwords: entrepreneurial, client-driven, empowering, collaborative, benchmarking, total quality management. Beyond the talk, innovative practices are indeed changing the profession.

To find out what the best-managed firms are doing, RECORD examined the practices of 30 top firms from around the country. These firms were selected based on nominations from management consultants, business authors, academics, and RECORD editors and correspondents. Each firm responded to a detailed questionnaire that examined practices in six key areas: vision/direction, marketing, project delivery, human resources, financial performance, and ability to change (see Methodology, page 115). Almost all of the firms offered data on compensation, benefits, billings, and profits. Since much of this was shared on a confidential basis, we used it as a data pool to create averages for what well-managed firms around the country are making and what they're paying.

Vision/Direction

Like politicians running for office, architects are grappling with "the vision thing." Mission and vision statements are all the rage and can be found mounted on waiting-room walls and stenciled on coffee mugs. Some firms, though, confuse image with vision—mistaking who they are [illegible] the future (vision). The firms that [illegible] direction usually involve everyone—from interns to associates to partners—in creating a shared view of where the firm is headed.

According to management consultant Paul Wesley Nakazawa, AIA, a strong vision is the foundation on which success is built. "It all starts with a view of where you want to go," says Nakazawa, an architect by training and a principal of the consulting firm Pearson Egan Nakazawa. "If a firm's leadership has vision, then management follows." A clear vision provides the direction needed for "the creative orchestration of markets, strategy, process, and organization that is the hallmark of accomplished firm leaders," he explains.

To make everyone aware of their direction, many firms are sharing information that they once kept close to their vests. "We run an open-book firm," says Wilson Pollock, FAIA, president of ADD Inc., a 75-person firm in Cambridge, Mass., that celebrated its 25th anniversary in 1996. "Everyone knows the financials of the projects they're working on, and to a large extent, the financials of the firm as a whole." In addition to striving to bring "extraordinary design and value to clients" and recognizing responsibilities to the environment and society, ADD Inc.'s vision includes empowering employees and encouraging them to take risks. The only way to ensure employees will take the initiative is to give them the information they need, says Pollock.

ADD Inc., which was the first architectural firm to be named Small Business of the Year by the Greater Boston Chamber of Commerce in 1995, takes the idea of employee buy-in literally. In 1989, the firm established an employee stock-ownership plan, which has transferred 80 percent of the ownership to the people who work there. By 2000, all of the firm will be employee-owned. There's nothing like owning a piece of the action to make employees feel responsible. (See Compensation section for more information on this topic.)

Promoting the value of architecture to corporate managers is a key element in the vision of Design Management Corp., an eight-person firm in Natick, Mass., a suburb of Boston. From the firm's name to its dealings with clients, Design Management Corp. emphasizes the total management orientation of its services. "Our goal is to help our customers become more profitable by being their best resource for facility planning," states principal Janis Reiters.

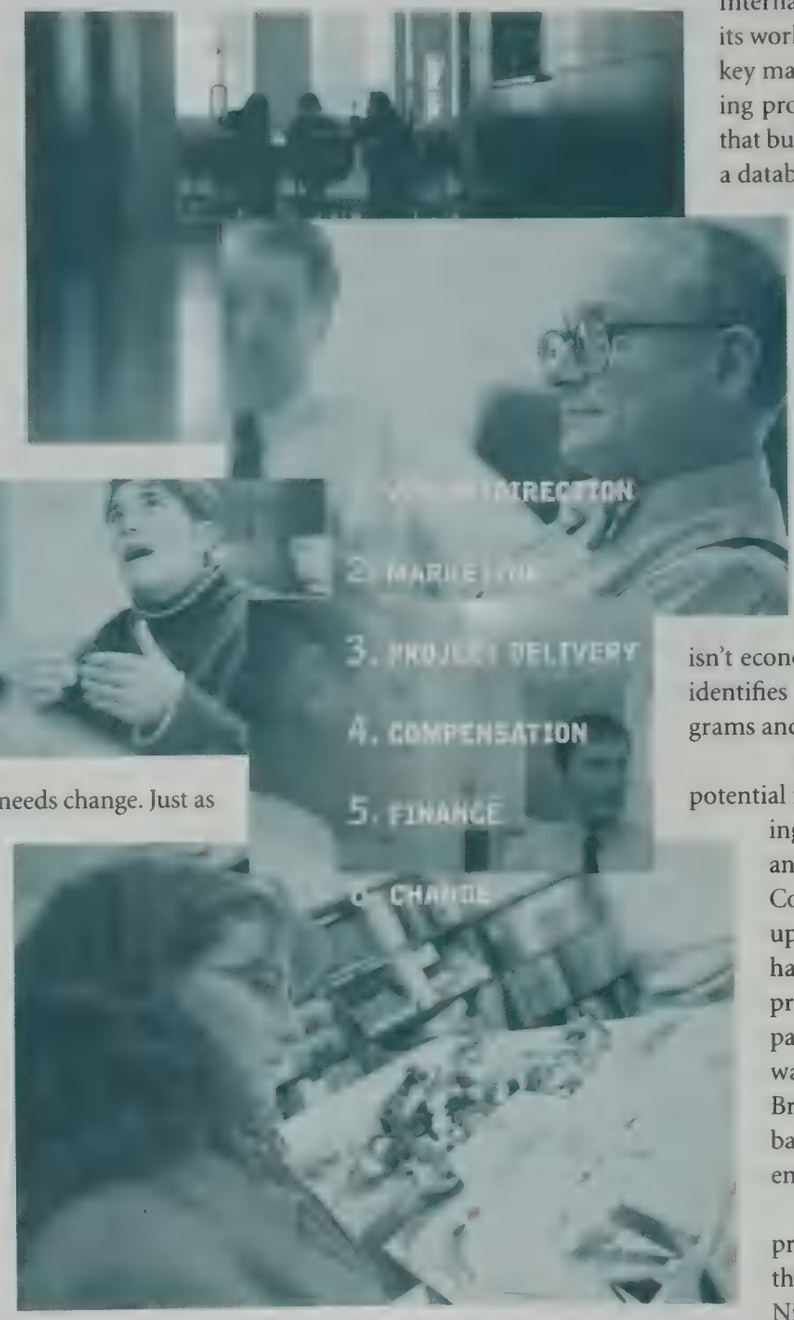
Reiters remembers a very different approach being taught at architecture school in the early 1970s. "In school, if a cantilever looked good but cost twice as much as a simpler alternative, who cared?" After

raduating, Reiters learned that most people in his profession saw clients s just "stages for architects to stand on." When the last recession hit in ıe second half of the '80s, many of the traditional sources of architec-ıral work dried up and architects had a difficult time convincing :ruggling businesses they could rovide services of real value.

In 1992, when the Boston rea was still reeling from the col-ıpse of the "Massachusetts Miracle," :eiters and his partner Kristin Hill tarted their firm. "I got rid of my weed jackets and bought some usiness suits and wing tips," recalls Reiters. He started looking at archi-ecture from the viewpoint of the lient. "When a client walks through facility, he isn't looking for great lesign opportunities. He's ooking for ways to get hree more workers in the lepartment over here and our more over there."

Instead of selling ırchitectural services on a ›roject-by-project basis, Reiters positions his firm ıs a source of expertise that :lients can use over and over, as their needs change. Just as ı good investment counseling firm 'takes your money and farms the ıell out of it," Reiters sees his firm's ıob as taking a "client's facilities ınd farming the hell out of them."

BOORA Architects in Portland, Ore., has followed a different path to success. Having designed a number of performing arts centers in the Pacific Northwest, BOORA maintains strong roots in the local arts community by providing free space in its offices for two nonprofit arts groups: Portland Arts and Lectures, and the Portland Institute for Contemporary Art. Clearly, the connection with the arts is both charitable and professional. The payoff for BOORA includes strengthened relationships in the arts community and good public relations, says Pat Harrington, one of the firm's nine principals. But the most important benefit is something less tangible. The arts groups, says Harrington, help "set loose a creative virus in the office."



Marketing

There are nearly as many successful marketing strategies as there are successful firms. The one common element in the marketing practices of the firms covered in our survey is the emphasis on service. "Architectural practice is undergoing a fundamental redefinition," states Richard Hobbs, vice president of the American Institute of Architects and the person heading AIA's "practice and prosperity initiative." "Firms are moving from a product- or project-based model to a service-based model," says Hobbs. The goal of such a strategy is to increase repeat business, which is more profitable and steadier than new business.

Some of the firms responding to our survey provide a broad range of services targeted at narrowly defined markets. For example, BSW International, a 405-person firm known for its work for Wal-Mart stores, focuses on one key market: customers with "volume-building programs." Targeting only corporations that build many facilities, BSW has developed a database of approximately 1,500 prospects that it tracks on an ongoing basis. The strategy has allowed Tulsa, Okla.-based BSW to follow its clients around the country and into Canada and Latin America.

Although Hammel Green & Abrahamson, Inc., in Minneapolis, has a more traditional mix of four key building types—corporate facilities, cultural and religious buildings, schools, and healthcare facilities—it too focuses on the big-fish customer. Realizing that it isn't economical to chase every client, the firm identifies those with long-range building programs and maximizes its repeat business.

An innovative way of identifying potential repeat customers is to find fast-growing companies that keep needing bigger and more facilities. Design Management Corp., which specializes in corporate fit-up work and office-space planning, has developed a database of 3,000 prospects using a standard software package called MarketPlace. The software crunches data from Dunn & Bradstreet and can call out prospects based on geography, the number of employees, and increase in employees.

Another way to expand is by providing a broader range of services than just architectural design. Askew Nixon Ferguson Architects, a 37-person firm in Memphis, Tenn., has set up two stand-alone companies—one called OnLine for facilities management and the other called CMPlus for construction management. Having separate entities providing these services allows the firm to project the image of being specialists in these fields, not just dabblers in nontradtional architectural spheres.

Kwan Henmi, a 30-person firm in San Francico, has expanded its business by studying demographic, economic, and lifestyle trends to identify new markets. This process led the firm into designing senior housing and single-room-occupancy (SRO) hotels when these markets were just beginning to heat up. "It's part serendipity, part being in touch with what's going on," explains principal Sylvia Kwan, AIA.

For example, the firm was involved in changing ordinances in San Francisco to allow new SROs and it then used this experience to design the first legal SRO in decades—a 257-unit project completed at the end of 1996. Getting a jump on the competition has allowed the firm to



PROFILE

Large firm: BOORA Architects, Portland, Ore. When BOORA Architects built a beach house on the Oregon coast for all of its employees to use on a rotating basis, profit wasn't even a consideration. The idea was to provide a memorable perk that everyone in the firm could share. But like so many other innovations at BOORA, building the beach house turned out to boost the firm's bottom line, as well as its employees' morale. The land and house cost $450,000. Just one year later, the property has a market value of about $550,000, says Pat Harrington, a principal. By doing good, BOORA has found itself doing quite well.

Started in 1958 in a trailer in suburban Portland, the firm remains true to its unconventional roots even as it has grown to be the second-largest architecture firm in town with 84 employees.

"Coming from Oregon, we've always had to look for work beyond our home base," explains Robert "Bud" Oringdulph, FAIA, the last of BOORA's three founding partners still on the job. "As a result, we've always had to be competitive." Today, the firm has nine principals—two of whom are not architects. (Harrington, who handles marketing, came from an old client, the Portland Center for the Performing Arts, and Mary Van Domelen, the c.f.o. has an accounting background.) "Having non-architects in decision-making roles has changed the firm in a profound way," says Oringdulph. "It's given us a better awareness of the needs of clients and the public, and a greater sense of pragmatism."

Although it now attracts employees from around the country, the firm remains true to its original design ethos of concern for context, climate, scale, and planning, says principal John Meadows, AIA. "We're still a regional firm with some building types such as schools and healthcare, but national with others such as performing arts centers and retail," says principal Dennis O'Toole, AIA. High-flying clients such as Nike, Intel, and Portland Trailblazers-owner and Microsoft executive Paul Allen are starting to take BOORA around the country. One client, Aetna Life Insurance, is giving the firm work in China.

"The decision-making process here is more open than any other place I've ever worked at," says Michael Tingley, an associate. Leslie Kuhl, an associate principal, says "Some new people here are amazed when they're asked what projects they'd like to work on. They're not used to being involved in such decisions."

Since certain projects are inevitably more desirable than others, some jockeying goes on for plum assignments. "It's competitive here," states associate Ellen Fortin. "There are a lot of really sharp people." But at the same time, the firm emphasizes "working smarter not harder," and doesn't expect employees to work 80 hours a week.

Profit-sharing and a host of committees that involve employees in decision making give associates at BOORA a sense of empowerment. "We're all involved and we can see where we're headed," says Fortin. And that looks up.







Snapshots from Portland, clockwise from top: three BOORA associates confer at a workstation; principals Bud Oringdulph (left) and Tom Pene (center) talk as associate Michael Tingley listens; an informal meeting; principal John Meadows.

develop a local track record in certain building types, which it uses to expand into regional, national, and international markets.

OWP&P in Deerfield, Ill., is leveraging its strengths in the health-care and life-care markets to expand into nontraditional services. Last year, the 203-person firm established The Continuum Group, headed by a former hospital administrator, to provide elder-care strategic planning and management consulting for its existing life-care and health-care clients. In evaluating new services to offer, OWP&P uses several criteria, says OWP&P president Len Peterson, AIA: profitability, continuity of client relationships, and the firm's ability to provide value-added, as opposed to commodity, service.

Perkins & Will (P&W), headquartered in Chicago, has been pursuing an aggressive strategy of growth by acquisition over the past two years. Since the firm's board of directors approved a plan in November 1994, P&W has expanded, going from 240 employees in two offices to 416 employees in seven locations. By acquiring firms and opening new offices, P&W has added locations in Atlanta, Charlotte, N.C., Miami, Los Angeles, and Minneapolis to go along with long-time offices in Chicago and New York. "We followed a simple premise," explains James Stevenson, AIA, P&W's president, "that one plus one equals three."

By expanding into parts of the country where it had no permanent presence—specifically the South and West—P&W hopes to reinforce its vision of itself as "a global network of world-class professionals offering a broad array of multidisciplinary services centered on a core design practice." The goal is greater diversity—in terms of geography, markets, and services, says Stevenson.

Before setting out on its buying binge, P&W developed a profile of the kind of firms it was interested in: medium-size operations of between 60 and 75 employees, with solid foundations in at least two markets, strong financial statements, and a culture of quality design. "There are two different approaches you can take in acquiring other firms," notes Stevenson. "You can go bottom-fishing or you can go for profitable firms. We decided at the very beginning of the process that we were only interested in strong firms."

With building booms tranforming parts of the developing world and large-scale projects being scarce in the U.S., a number of American firms are keeping busy by working overseas. For example, Baltimore-based RTKL Associates has been aggressively planting its flag in foreign lands. The firm has offices in Hong Kong, Tokyo, and London, in addition to its offices in Baltimore, Washington, Dallas, and Los Angeles. The firm seeks to "open offices in those parts of the world that offer a strategic advantage," states RTKL chairman Harold L. Adams, FAIA. The firm's goal is to "grow these offices organically—in other words as local studios staffed with RTKL-trained nationals who ultimately form the leadership of that office." While this approach takes longer to pay off, it is more effective than sending American architects to run offices in foreign countries, says Adams.

A growing number of firms are teaming up with other architects both abroad and at home to pursue opportunities. In 1990, St. Louis-based Hellmuth, Obata & Kassabaum, Inc., formed a strategic alliance with Kajima Corp., the giant Japanese design-build firm, to jointly pursue international work. The two firms have also started a new joint entity HOK/K to provide industrial facilities design and environmental engineering services.

About a year ago, OWP&P joined the Star Alliance, a group of 13 architectural and engineering firms from around the U.S. whose members share ideas on strategy and operations, and sometimes team up to pursue jobs. The alliance was formed four years ago by Lou Marines, a San Francisco-based architect and consultant who founded the Advanced Management Institute, which provides continuing education for achitects.

Although a large firm, OWP&P has traditionally stayed close to home—the Chicago metropolitan area. With help from its fellow Star Alliance members, the firm hopes to spread out both nationally and internationally. "Our goal is to position ourselves to attract large multi-state clients," says OWP&P president Peterson. Membership in the alliance has already paid off, with the firm joining Charlotte, N.C.-based Odell Associates to land a big healthcare job. Recently, OWP&P heard about a project in Brazil and was able to investigate it further, thanks to another Star Alliance firm's contacts there. "It's been an exciting process," remarks Peterson.

No matter what their marketing strategy, well-managed firms are emphasizing the bottom-line value of their services to their clients. "The real sign of a successful firm," states Frank Stasiowski, chief executive officer of PSMJ/Resources, a management consulting firm in Newton, Mass., "is that it helps its clients succeed at their business."

Project Delivery

Management hierarchies and complex chains of command are relics of a previous era. Today, successful architectural firms are going horizontal, eliminating layers of management and giving their project teams more responsibility. Not only does this reduce the number of places where delays can happen, but it brings project teams in more direct contact with the client. From small practices to multi-office firms, the trend is to give teams the job of taking projects from the early stages of pre-planning all the way through construction. This usually means that principals have to play active roles in the teams, and team members must be well informed about everything from the client's budget to the contractor's responsibilities.

When asked how it coordinates firm-wide management and project-delivery management, a spokesperson for Hammel Green & Abrahamson, Inc., a 275-person firm based in Minneapolis, replies "They are one and the same." Partners are responsible for getting work and then for delivering it in the form of completed projects. "We believe in a hands-on organization."

Leaner management structures tend to empower team members to look at the big picture. Marketing, client relations, research, design, and project delivery are viewed together, not separately. At

MEDIAN SALARIES OF SURVEYED FIRMS

	PRINCIPALS (HIGH TO LOW RANGE)		SENIOR ASSOCIATES	ASSOCIATES
Large Firms (50+employees)				
salaries as per AR survey[1]	$148,680	$102,431	$65,702	$51,138
US median salaries[2]	$149,000	$100,000	$64,000	$60,900
Small Firms (0-49 employees)				
salaries as per AR survey[1]	$100,400	$73,735	$63,250	$48,992
US median salaries[2]	$99,999	$75,000	$57,000	$52,000

[1] *Does not include bonuses or stock options* [2] *Based on 1996 AIA salary survey*

Einhorn Yaffee Prescott, a 356-person firm with offices in Albany; White Plains, N.Y.; Washington, D.C.; and Boston, "project profitability is the responsibility of the entire project team," notes a firm spokesperson. This requires that financial information for each project be shared with and tracked by all team members.

Retaining the direct involvement and agility of small firms is one of the key concerns of large offices. The Hillier Group, which has 350 employees in seven offices in the U.S. and Australia, has responded to this issue by developing a system of studios, which function much like small firms. "Guerrilla forces move faster than large armies," states J. Robert (Bob) Hillier, FAIA, president of the Princeton, N.J.-based firm. "Our studio system assures speedier delivery and a higher degree of ownership on the part of all architects who come in contact with the project in that studio," explains Hillier. The firm's main office in Princeton has six studios, while each of the other offices acts as an independent studio.

To keep the bottom line within view of everyone, each project at Hillier begins with a documentation process that "in essence, forces development of a 'mini business plan.'"

Gensler, a 953-person design firm with offices in the U.S., Europe, and Asia, also relies on studios to bring a small-firm atmosphere to a large operation. "The studio is the professional building block and basic unit of client service," states a spokesperson. "Each studio operates as an independent unit within the regional office, responsible for business development, staff growth, and quality assurance." To inject fresh blood into studios and give individuals a feeling for how the firm as a whole works, Gensler frequently shifts people from one studio to another and even from one office to another—a practice that only a big firm can do.

Connecting the various studios and offices together has become easier with electronic technology. A wide-area network and e-mail link computers at Gensler allow efficient sharing of documents. In many cases, Gensler is networked to customers and consultants to expedite the transfer of information. The firm is also experimenting with interactive data conferencing to run long-distance design charrettes without having anyone travel further than down the hall.

Zimmer Gunsul Frasca Partnership, which employs 220 people in four offices around the country, uses the latest Internet technology to establish private World-Wide-Web sites where project information and drawings can be shared among project-team members, outside consultants, contractors, and the client.

While firms are encouraging creativity by giving project teams more responsibility, they are also standardizing procedures to pass along experience from one generation to another. HKS, Inc., a 334-person firm based in Dallas, has pulled together teaching documents, standardized details, and standardized methodologies into a veritable encyclopedia it calls HKS Guidelines. The documents also double as "defacto pricing packages" for a variety of building systems. BOORA in Portland, Ore., has developed something similar: a process booklet that provides "a uniform approach to all areas of our work efforts, while allowing for modification to meet the unique requirements of each project," says partner Harrington.

Computer technology is also helping some firms track projects as work progresses. BOORA has developed software programs that link managment data to its accounting department. The link can give immediate status reports on fee budgets for the firm's staff and for consulting engineers.

Providing quality control during all phases of a project's development is a growing concern of architects. The Orcutt/Winslow Partnership, a 64-person firm in Phoenix, uses an unusual two-team approach to project management. For each project, a primary team takes lead responsibility for all aspects of the process and an assist team provides quality control and can be used for back-up staffing. A more typical arrangement is the peer-review system that Zimmer Gunsul Frasca employs, in which the firm's most technically knowledgeable senior staff members review projects to ensure consistency and quality of detailing and documentation.

A few firms are considering going through the lengthy ISO 9000 certification process, which involves an independent quality review of every aspect of a firm's operations. More common in Europe, ISO 9000 certification is used by a growing number of industries to recognize service and product-manufacturing companies that meet very high international standards.

OWP&P is one firm exploring the ISO 9000 route. Having started a total-quality-management process several years ago, OWP&P has already adopted many of the continual-improvement practices that would be required under ISO 9000. "It's a lifelong endeavor, not just something you do once," notes OWP&P's Peterson. Some international

INNOVATIVE MARKETING STRATEGIES



1. **Established strategic alliance** with giant foreign design-build company to pursue international work (HOK)
2. **Hired an experienced healthcare and laboratory planner** as a principal, to bring the customer's perspective into the firm (SRG Partnership, a 40-person firm in Portland, Ore. that specializes in education, healthcare, and research facilities)
3. **Developed database of 1,500 prospects** and tracked them on an ongoing basis (BSW International)
4. **Developed database of fast-growing companies** likely to need space planning and design services (Design Management Corp.)
5. **Joined alliance** with other architectural and engineering firms (OWP&P)
6. **Tailored each marketing brochure** to the needs of the prospect; never used a standard brochure (Mahlum Partners, a 75-person firm in Seattle with expertise in three general building types)
7. **Studied demographic, economic, and lifestyle trends** to identify new markets before they get hot (Kwan Henmi)
8. **Joined a design/build consortium** to provide a specialized type of facility on a turnkey basis (Tsoi/Kobus, an 87-person firm in Cambridge, Mass.)
9. **Established a "maintenance marketing" program** that keeps contact with clients who don't have active projects with the firm (Orcutt/Winslow Partnership, a 64-person firm in Phoenix)
10. **Wrote a book and held a national symposium** on innovative healthcare architecture (Watkins Carter Hamilton Architects, a 12-person firm in Bellaire, Tex., specializing in the healthcare market)

rporations such as the major automobile companies use ISO 9000 certification as a way of identifying product and service suppliers with hom they want to do business. "I wouldn't be surprised to see the ealthcare industry start requiring ISO 9000 certification sometime in the ıture," says Peterson. "I'd rather be ahead of the curve."

Compensation

the late Abraham Maslow, a psychologist who studied work and its elationship to mental health, was right, individuals who toil at creative bs and function at high levels have the greatest potential for achieving appiness and well-being in their lives. This should come as a great conolation to the many creative architects who are not well-paid. It seems nat almost all architects, if not all, have said at some time that they are rchitects because they love the work, not for its financial rewards.

The earnings of principals, senior associates, and associates in ne firms we surveyed are on a par with the national average according to recent AIA study (see chart page 109). On the surface, this might indiate that a firm can pay average wages and still be considered ell-managed. However, most of the firms listed base salaries only, and onuses were not included in the salary figures. Where bonus figures ere included, we subtracted them from base-salaries before averaging nem with the other base salaries. Bonuses can increase a person's income y 30 to 100 percent and over, depending on their position in the firm, heir responsibilities, and the amount of profit.

The American Institute of Architect's chief economist Kermit Baker says that while salaries for recent graduates and newly registered rchitects have increased only slightly over the past few years, they are ncreasing more rapidly for senior architects. "There seems to be an merging shortage of experienced people, who know how to manage a roject. If you don't keep up with what the guys across town are paying, ou may wind up losing people to them."

Senior associate Dave McHenry of Hillier's Philadelphia Office elieves that money alone will not attract and keep employees: "What eally makes a difference is paying well, but also having a corporate culure that rewards people in less-tangible ways. We try to make our office fun place to work, and we don't hold anybody back."

Hillier's Philadelphia design director Scott Erdy says, "Here, you get to step up to the plate and you're given all you can handle. It isn't like other firms where I've worked that have a strict hierarchy, and you're forever working for whoever has been there longer than you have."

There are other benefits for firms whose culture rewards initiative and long-term employment: these firms also maintain continuity in what might be regarded as "human databases" of information about the firm's work and business practices. McHenry notes that one of the reasons that the Hillier Group has been able to expand from a single office to seven in the last seven years is that, "Our people become thoroughly familiar with how we do business, how we relate to clients, and how we treat our people. When it has been time to open a new office, someone was ready to manage it."

Insurance. With dramatic increases in the cost of medical care, insurance has become a benefit that employees scrutinize almost as closely as wage structure. The cost of treating a catastrophic illness or accident can easily exceed an employee's annual salary, so employees may feel that health insurance benefits are really an indicator of how much an employer values both health and financial well-being.

All of the firms we surveyed provide health insurance but the extent of these benefits varies greatly from firm to firm, mostly because of differences in cost from region to region. Almost all the firms we now using some type of managed care with prescription plans, and some subsidize family coverage. Dental care may also be covered or optional. Life insurance benefits ranged from $15,000 up to twice the base salary of the employee. Disability coverage varies from firm to firm, but is available at the discretion of employees at additional cost almost everywhere.

"These benefits have always been viewed as part of the wage structure at the Hillier Group," says Michael Kessler, Hillier's director of human resources. What we are trying to do is maintain that competitiveness with a total program, for two reasons. One is to attract the best talent we can find, and the second is to retain them. It becomes increasingly important to look at each piece of that compensation package beyond salary. Today when I am talking to a potential employee, the discussion isn't just over salary but also the benefits and career growth and development."

The difficulty of managing insurance benefits is compounded when branch offices are involved. When Einhorn Yaffee Prescott Architecture and Engineering, of Albany, and Washington, D.C., acquired its White Plains, N.Y., office, it became clear that maintaining three different benefits packages with different levels of coverage was cumbersome to administer and not fair to EYP's employees. "We surveyed our employees to determine what they wanted in terms of coverage, and even looked at what other firms in these areas were offering their employees," says human resources director Harriet Rifkin, "and the partners put together a budget.

"At that point we selected an insurance broker to help us find companies that would cover us, but it was frustrating. We couldn't find any company that could offer everything we needed." As the process evolved, a committee of employees helped review proposals and communicate to their colleagues the progress of the search for the ideal package of medical, dental, disability, and life benefits, until the right group of insurers was found. "There was a cheer when it was announced," says Rifkin. "The main thing was clear communication throughout the process, and making sure that everyone in all of the offices was treated alike."

401(k)s, bonuses, profit-sharing plans, and ESOPs. Almost all of the firms we surveyed contribute to employees' 401(k) plans. In addition,

BEYOND DESIGN: WHAT FIRMS ARE OFFERING



1. Computer consulting, digital graphics, facilities management software, asset-management software (ADS Inc.)
2. Facilities management, construction management (Albert Kahn Associates)
3. Facilities management software, web hosting, graphic systems for large cities, and products developed in-house, such as a wireless electric light switch (Hillier Group)
4. Elder-care benefits, estate planning and management, and family-oriented management (DWP&P)
5. Value-engineering, buying plants with fund-raising events and gardening (DOSHA)

other forms of compensation are provided to motivate employees to contribute to the good fortunes of their firms, and their rewards are directly related to their efforts. The dilemma comes in defining the best way to reward different contributions by different individuals. Of all the firms we surveyed, the Hillier Group seems to have tackled this problem the most ambitiously. Besides the firm's 401(k) plan, each year approximately 5 percent of each employee's salary is set aside to purchase stock in the company. If the employee leaves, the stock is sold back to the firm. If the employee remains with the firm to retirement age, the stock serves as the employee's retirement fund.

Profit distribution is handled through the Hillier Group's "Salary Enhancement Plan." Once the firm has met an earning's target, the profits of all the studios are pooled. This fund is broken down into smaller pools, each sized according to employee rank, from principal down to support staff. All employees are automatically awarded 50 percent of the average bonus in their particular rank. The remaining 50 percent is distributed according to the ranking of each employee within their pool. The top fifth splits 40 percent of the pool; the next fifth splits 30 percent; the third fifth divides 20 percent, the fourth fifth splits 10 percent and the bottom fifth receives nothing.

According to Bob Hillier, principal of the Hillier Group, this represents a change from a previous arrangement where work was divided between different studios in the office, and profits were distributed among studio members according to how much profit each studio made. "When a new job came into the office," he says, "each of the studios fought over it. Things would get ugly and peoples' feelings got hurt. Dedicating different studios to different building types and pooling the profits changed everything. Now everyone pulls together, but people are still rewarded for their individual efforts." The system rewards advancement, because there is more money split between fewer people at higher levels. And, under the system, an excellent employee need not be penalized because he or she is working for a manager who is not doing an exceptional job.

In addition to the five percent of salary put away into stock, a stock-option plan rewards senior employees most dedicated to the development of the firm. The number of options is determined by the growth from the previous year, multiplied by its level of profit percentage. The firm's executive committee determines which members of the firm receive these stock options.

Other methods for rewarding initiative have evolved at the Hillier Group. They maintain a spot-bonus plan. Principals can award bonuses of up to $1000 "on the spot" for a particularly exceptional effort on the part of an employee. Stock and cash are awarded to employees as they are promoted to associate, senior associate, and so on. The firm's suggestion program rewards an employee by matching 25 percent of the money saved the first year after a money-saving suggestion is adopted. Entrepreneurial spirit also is rewarded as promising ideas for profit-making enterprises are financially backed by the firm. Facilities-planning software, and an prepackaged enzyme product that can be added to lakes and ponds to control algae growth have both been successful.

Most of the firms surveyed share profits only in the form of annual bonuses. Einhorn Yaffee Prescott has departed from this strategy for the first time this year by offering bonuses on a quarterly basis. Steve Einhorn, AIA, says, "a year is just too long to wait to reward employees for their hard work," especially when profit from a good quarter can be diminished by a subsequent bad quarter.

Employee stock-option plans are in use at about a third of the firms we surveyed as a way of getting their employees to "buy in" to the business, not only in a literal, ownership sense, but also in the sense that owners do a better job of serving their clients. Most firms offer stock options only to senior employees, using ESOPs to gradually transfer firm ownership to individuals who one day may become partners. However, a few, such as Hillier and OWP&P offer stock to employees at all levels, the number of shares based on employees' salaries.

NBBJ, a 615-person firm based in Seattle, offers some of the better career development opportunities. One program, called "Oregano," sends a group of staff members abroad to learn about the culture and architecture of other countries. A mentoring program assigns a senior staff member to every new employee, to acquaint them with firm procedures, and to be an advocate for that employee's professional growth.

Besides the brown-bag educational programs common at many firms, NBBJ gives each of its design studios its own budget for educational purposes. This allows each group the ability to customize educational programs for its own needs. As well, each studio holds critique sessions at least three times per month. These are open to all members of the staff and provide an opportunity for people to interact and exchange ideas at all levels of project design.

One of the better indicators of the enhancements that make a firm a good place to work might simply be regarded as the extras: small details that bring the firm together and show that management cares. Design Management, an eight-person firm in Natick, Mass., sponsors a ski weekend every winter.

INNOVATIVE PROJECT DELIVERY STRATEGIES



1. **Created SWAT teams** for projects when schedules are tight and fast action is required (Tech Valley)
2. **Established benchmarks** and continually measured and improved performance (BSW International)
3. **Clustered project teams** for easy communication and work flow (HOK)
4. **Developed software** to link management data to accounting department
5. **Developed a process booklet** that provides a uniform approach to project management, and implementation (SCORA)
6. **Established special-projects group** to work on small projects that otherwise wouldn't be large enough for firm to deliver (HKS)
7. **Used a two-team approach** in which a primary team takes lead responsibility and an assist team provides quality control and back-up staffing (Orcutt/ Winslow Partnership)
8. **Developed in-house encyclopedia** of implementation and construction methodologies (HKS)
9. **Used digital technology** and internet to connect employees, consultants, and clients (Zeisler and Zeisler Fraioli)

PROFILE

Small firm: Design Management Corp., Natick, Mass. A few years ago, Janus Reiters and Kristen Hill, employees of a moderately sized, conservative architectural firm, took time out to look ahead at their professional lives. What they saw were career opportunities they wanted to pursue in "total project management." What they also saw was that it wasn't going to happen if they stayed where they were. "We were constantly being pushed back to doing the traditional types of things that the firm was used to doing," says Reiters. "One day we decided that leaving made more sense than staying. We had offers to buy in, but financially that didn't make sense either. After all the years of buying into the firm, who knew if we were going to have the power to do what we wanted to do?"

What Reiters and Hill wanted to do was offer what might be called "extra-architectural services" to clients: space planning, furniture and communications design, even coordination of movers. "There are real estate companies, furniture companies, movers," says Hill, "all of whom have a vested interest in picking up this work."

Hill believes that architects are trained to coordinate projects, and that they know all the bits and pieces. "And we can serve our clients impartially because we have no vested interests. We've found that there's a whole realm of clients out there who have this space, but they haven't got a clue what to do with it. It isn't just the planning of the space, it's the infrastructure, the cabling, the phone systems. If they are renovating, or moving, you have a CEO or managing partner in charge, and they have jobs they need to do beyond managing space. They need help. They don't realize you need to look into your phone system at a certain point and coordinate it throughout the entire project. It's not like you go to Staples and buy a phone system. They don't understand the research that goes into that. We do, and we bring that to the table."

Reiters adds, "The scope of services we provide attracts a different sort of clientele. It's well-suited to the corporate sector, because we provide total project management. Even in-house we have different capabilities. We have developed alliances with other consultants and vendors, although we don't have vested interests in any of these people, and we will bid one against another. We are a one-stop source for a lot of our clients, and many of them avail themselves of those services." But Design Management hasn't abandoned traditional architectural services either. "We have about a 60-to-40 percent split between architectural services and project management. We've done projects where we did none of the design and all of the project management. We even had one client ask if we knew anyone who could design a new entrance for their building—they had forgotten we are architects too."



Janus Reiters and Kristen Hill tap the 'extra services' market.

At the Hillier Group, company unity is engendered when branch offices compete against one another in an annual T-shirt-design competition. The winning design is worn by members of all the offices when they attend their annual meeting as a symbol of unity. Hillier also awards travel certificates and an extra week's vacation to those who celebrate their 10th, 15th, 20th, and 25th anniversaries with the firm.

Some firms are practical, offering seminars, flexible scheduling to help employees care for their children, tuition, and even free flu shots.

Finances

The purpose of this survey was to learn about the best-managed firms, knowing that they might not necessarily be the most profitable. However, all 30 firms are financially healthy, even if not wealthy. Most of the firms shared confidential information concerning their 1995 billings, net service revenues, chargeability, and multipliers.

Seven of the 30 firms responding to our survey had increases in billings that topped 20 percent. One firm with 20 employees increased its billings by a whopping 61 percent. AIA economist Baker says that considering the amount of activity in the economy, "increases in total billings between 1994 and 1995 that range from 10 to 12 percent are fairly typical." He considers increases in the range of 20 percent to be quite high.

Still, these increases in billings can be misleading. Over the same period, increases in Net Service Revenues (the amount of money left, including profit and overhead, after fees for consultants, subcontractors, and reimbursables are subtracted) are much more modest than increases in total billings. This would indicate that a good deal of the extra money earned by these firms during 1995 was "pass-through" money, paid to consultants or suppliers outside the firms.

Two additional numbers help factor out some of the variables of firm size and their net billings. The first is chargeability. This is the annual



PROFILE

Medium firm: The Hillier Group, Princeton, N.J. When an employee of Hillier Philadelphia was asked where the corporate culture of the Hillier Group comes from, he replied without hesitiation, "It comes from Bob Hillier." Only Bob Hillier, FAIA, might disagree. Although the Hillier Group's aggressive growth from one office to eight in the last seven years is surely a reflection of Hillier's entreprenuerial spirit, still, he steers the credit for the firm's success away from himself, placing an extraordinary value on employees' loyality and longevity. "One of the reasons we've grown," he says, "is I feel we have a commitment to give the people here a career. It's very anti-1990s, with all this corporate shake-up stuff, but I think you owe people a career if they want it."

Hillier's studio organization is one of the keys to successfully managing this far-flung architectural empire, which includes an office in Sydney, Australia. All of the offices except Sydney are connected through a wide-area computer network, facilitating the exchange of E-mail, drawings and construction documents, time sheets and other documents. Managers and business development people from all of the studios hold frequent teleconferences. Each of the satellite offices operates as a separate studio, and is responsible for getting its own jobs, developing a "mini-business plan" for executing them. Project managers and studio group leaders are responsible for assuring that they are profitable.

People are one part of the Hillier Group's recipe for success. Another is riding building markets while they are developing, abandoning them when they are mature, and making transitions into markets that may not necessarily be new but currently have a high demand, like research-and-development laboratories and big-box retail buildings. The group also jumps at the chance to take on emerging building types, like computer-telephone operations centers and casinos. The casino group evolved out of Hillier's hospitality group and now seems to be evolving again, this time into an entertainment group. Currently, retirement communities and shopping malls are beginning to appear on the firm's CADD screens. Working on a number of building types at the same time within the firm eases the transition from one building type to another.

In addition, the Hillier Group is taking an active role in pursuing the sort of non-traditional services and project delivery systems that architects are warned that they must pursue for success in the coming years. These include design-build, strategic facilities planning, construction management, and facilities management (complete with an innovative software product developed by the Hillier Group that is sold to clients).

When questioned about who might succeed him at the helm of the Hillier Group when he retires in a few years, Bob Hiller avoids the question somewhat. "If asked to vote, most people around here would probably elect someone who is really good at design. That's not what a firm needs. You need a COO and a CFO. And, you'd better put together two five-year plans for succession. Just in case the first one doesn't work."



Above: Bob Hillier. Middle: Hillier's Computer Training Lab. Below: The annual T-shirt design contest.



value of all billable hours (anything that can be put on timesheets and charged to jobs) divided by the firm's total annual wages and salaries (including marketing, business development and other non-billable wages). For example, if a firm's billable wages and salaries were $1,000,000 and the total wages and salaries paid out were $1,400,000, their chargeability would be about 71 percent.

In our study, these numbers varied between 60 and 70 percent. Of course, if all of the work done by a firm were billable, chargeability would be 100 percent. This might not necessarily be good however. Staff training, marketing and, perhaps some kinds of research, are not usually billable, but may very well pave the way to a firm's future success.

The second number is the multiplier. This is the net-service revenue (as above, a firm's net billings minus the cost of consultants and reimbursables) divided by the firm's annual wages and salaries. The larger the multiplier, the less a firm is paying out in wages, with respect to the overall revenue coming in. A high number such as 3.5, may reflect that a firm is doing a good job of estimating the costs of doing work, and that it is negotiating its contracts to more than adequately cover the cost of doing business. The average multiplier for the firms we surveyed with 50 or more employees was 3.1. The average for firms with less than 50 employees was 3.5.

We also asked the firms how many of their clients were repeats. Here there was a tremendous variation. Some firms had as much as 90 percent repeat business, others only about 30 percent. It is comforting to have steady clients, and when as much as 90 percent of one's business is repeat, it probably indicates clients have a high level of satisfaction with the firm's work. But architectural markets are also constantly shifting. When the rate of repeat clients is too high, it may indicate that a firm is not developing new markets, and should market more aggressively.

Change

If there was one common theme that ran through most of the replies, it was that the only constant in the business of architecture is change. Many who commented specifically on innovation said that they are changing the way their offices are organized, from centralized departments that handle all of the projects that come into a firm into studios. Studios are smaller work groups that specialize in one or several building types and handle all aspects of each job, from design development through construction documents. This gives the firms greater flexibility to deal with changing market conditions, and helps break down the resistance some clients have to working with extremely large firms.

While HKS, Inc. of Dallas has not converted to the studio system, it has developed "project clusters," interdisciplinary teams of staff organized to work on multiple projects. These staff are "cross-trained," in other words, they have spent time in both the production and design departments and understand the nuances of both of these areas. A special projects group delivers all of HKS' projects that have budgets of less than $5 million. HKS has also made a commitment to Total Quality Management, which they have retitled "Continuous Process Improvement." Every service provided by the staff is reviewed in terms of quality, cost, and delivery to clients, with the firm emphasizing innovation to meet or exceed the client's expectations. Employees at all levels are empowered to change the firm's work process if the change's effectiveness can be statistically supported.

One of the most important signs of change is the growing presence of women and minorities in these firms. Out of 5,298 employees counted by the survey, 23 percent qualify as minorities, and 51 percent are women. However these figures do not separate professional women and minorities from those on support staff. A sampling of firms surveyed showed that 15 percent of professionals are minorities, and 18 percent are female. These numbers are about 3 percent better than the national average for architects [see RECORD, November 1994, page 25].

Sylvia Kwan of Kwan Henmi Architecture Planning, San Francisco, notes that, "firms can create volumes of material about their affirmative action plans and do nothing. Or they can write very little and just do it. You have to really be committed and you really have to seek the people. I have a women-and-minority- *(text continues on page 204)*

THE WELL-MANAGED FIRMS SURVEYED

FIRM	CITY	NUMBER OF EMPLOYEES	NUMBER OF ARCHITECTS	NUMBER OF PARTNERS
ADD INC.	BOSTON	75	40	8
ASKEW NIXON FERGUSON ARCHITECTS	MEMPHIS	40	16	4
BSW INTERNATIONAL	TULSA, OKLA.	405	105	3
BOORA ARCHITECTS	PORTLAND, ORE.	84	36	9
DESIGN MANAGEMENT CORP.	NATICK, MASS.	8	3	2
EINHORN YAFFEE PRESCOTT ARCHITECTURE	ALBANY, N.Y.	356	126	25
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A Regular House Remodeled For a Special Way of Living

HOW AN INGENIOUS CLIENT AND HIS ARCHITECTS CREATED SOLUTIONS–LARGE AND SMALL– TO MAKE A RESIDENCE MORE THAN IT SEEMS.



The client's parents lived in a house built on a golf course in Palm Springs that gave him the idea to suggest the use of a narrow overhead door to allow access for his special bicycles (left and opposite). "They're very handy. Everybody who lived on the course had them for their golf carts," he said.

by Charles D. Linn, AIA

Nestled on a corner lot in a friendly Cambridge neighborhood is a classic 1930s Georgian Revival house that recently underwent an extensive remodeling. The work on the reconstructed brick street-side facades is so faithful to the original that only the neighbors who watched the demolition of all but a few hundred square feet of the original notice the difference. Boston architects Nick Winton and Alex Anmahian were inspired by their client, a dynamic, inventive software developer.

If a house is a machine for living, the success of this collaboration might well be judged on how thoroughly the structure's mechanical parts have been submerged—for behind the casework and plaster walls in this house, there are many machines, cabling for computers, and extensive wiring to control other electrical systems. Yet with only a few exceptions, the architects avoided making an overt expression out of these devices.

This would not necessarily be an exceptional path for a pair of architects to take. But Anmahian and Winton's client depends upon either crutches or a wheelchair for mobility most of the time. Homes and institutions that have been designed with too much reliance on accessibility manuals and institutional-hardware catalogs have a tendency to resemble the technical and sterile medical spaces that people who have been through physical rehabilitation would rather forget.

Anmahian and Winton's client reiterates this point of view. "The way this stuff is typically presented," he says, "is 'Here are things you have to do when people are handicapped.' The more advanced way of thinking is, 'Here are some clever things you can do when people are handicapped.' But what I hope could be presented here, is, 'Here is the overall challenge of designing a home. That includes all these other things, and, by the way, one of these things is accessibility.'"

The architects have been clever. There is not, for example, a single stainless-steel grab bar anywhere. And no ramp leading to the front door. The innovative work is surprising because when the client first hired them his concerns were only to increase the square footage, and to get more light inside.

The addition to the house is complex. "This also expresses the complexity of the client," says Anmahian. "He was dissatisfied with what he termed 'the details' of the building. We translated his ideas into a more formally defined addition, rather than adding more Neoclassical brick and trim. That's what he was looking for. And when we would develop drawings that would show complex parts and pieces, that's when he would begin to get excited." Winton adds, "He wasn't interested in replicating the language of this house, which made it easy for us because we weren't either."

The addition has the appearance of having been carved from a solid block of pure material. In this case, the material is mahogany, stained to a light color, that has been custom-milled and installed with a precision that is normally found only on handmade, interior casework. The house uses solid and permanent materials: lead-coated copper, slate, and bluestone, and on the interior, solid maple and ash casework and trim, and granite and terra-cotta countertops. In its use of wood inside and out, the addition bears a certain resemblance to Anmahian Winton's Minneapolis Pathways project [RECORD, July, 1994, page 78]: it is boxy and its detailing is not in the least fussy.

"The handicap issues are no more important than any that come up in the design of a house," says Anmahian. "These happen to be unique to this client in the same way a lot of issues are unique to other clients. His handicap was never a part of our discussions. It was always there, but it wasn't what drove the project." After a short period of time the client's handicap just became invisible, the architects claim. "He'd say, 'I need this for access, or I need this a certain way.' I actually think solving the technical problems would have been relatively easy, but satisfying ourselves as architects, and providing for his need for incredible, fascinating moments—like when he comes out of his study into this beautifully daylit, three-story stairwell with its skylight and clerestories—these were





The drawbridge: An innovation in accessibility. One of the client's most creative ideas was suggesting a way to access either the main floor from the garage or the basement, using only one ramp. "Our client asked, 'Why not a bridge that moves?'" says Anmahian. "You wouldn't necessarily suggest to a residential client, 'let's make this 2,000-pound thing that moves', but he did make it happen. He made a lot of things happen."

Anmahian and Winton designed what the ramp would look like and its overall dimensions, developed performance specifications, and worked with Gillespie Corp., a speciality engineer and fabricator of elevators in western Massachusetts. The bridge uses a hybrid of ancient technologies, counterweights, and a more recent one, the hydraulic drive; "all of the components are stock, except for the structural frame," says Anmahian. The prefabricated structural frame that supports the floor of the bridge and the handrails were assembled between two parallel supporting walls from sections. When the bridge is in the up position, (seen through a window in the garage wall above and left photo below) a permanent ramp that allows access from the garage into the basement is revealed. When down, (below right) the ramp to the basement is covered and the drawbridge itself allows access from the garage onto the main floor.

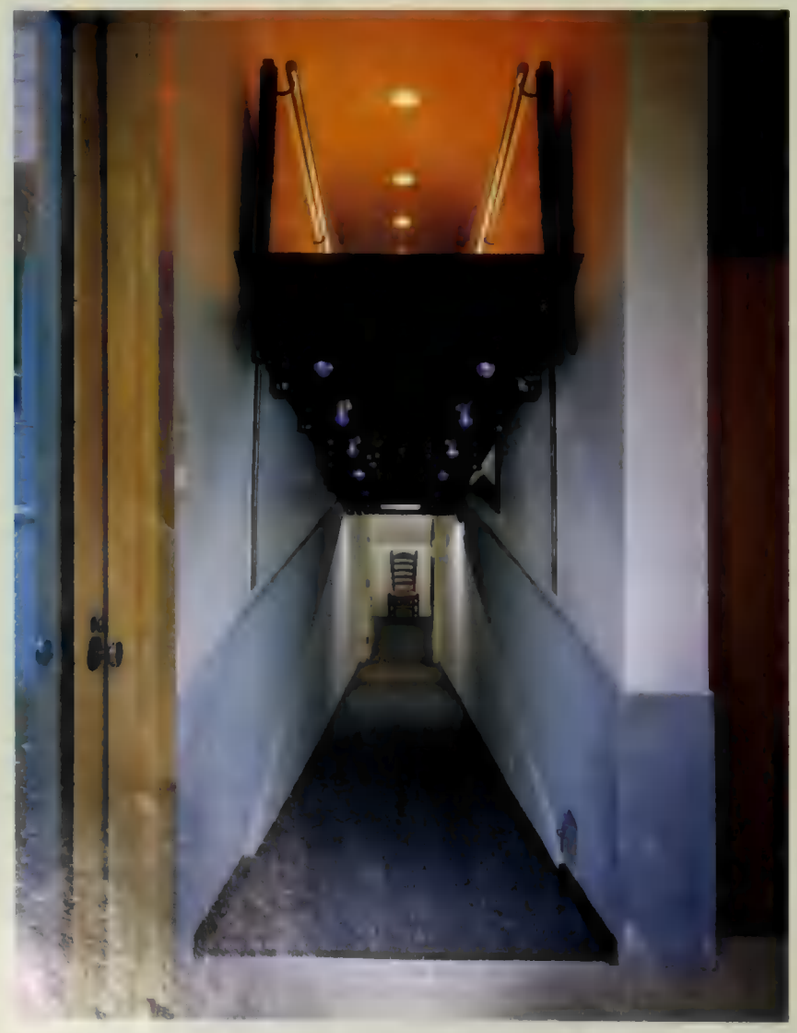
The actual mechanics of the bridge are more complicated than meets the eye. The weight of the bridge is balanced by counterweights: lead bricks which are strung on a cable, and concealed in the side walls, which are actually steel trusses to counteract the moment loading of the bridge. (The slots where the counterweight cables attach to the drawbridge are seen on the left and right sides of the walls in the foreground below.) A key activates a pair of push-pull, short-stroke hydraulic jacks at the shortend of the ramp, and these move the bridge. Push-pull jacks are different than other types of jacks because they pull the ramp down, rather than simply allowing hydraulic fluid to disperse under the weight of the ramp, which would allow the ramp to drop without being controlled.

An electrical solenoid is always controlling the flow of the hydraulic fluid. If power fails, the valves open and the counterweights return the drawbridge to its up position, so that no one can be trapped in the basement, a requirement for emergency egress. An automatic door at the bottom of the ramp opens any time the drawbridge is in the up position.

For safety's sake the drawbridge had to conform with any of the normal egress requirements, and according to Anmahian, it needed to work in such a way that any person could operate it intuitively.

One of the advantages of designing a structure constructed of stock components is that both the first cost is lower, as well as the cost of maintaining it. Any hydraulic elevator repair person can do maintenance. In fact, the hydraulic pumps are located remotely, in the mechanical room for the elevator.

Leaving no opportunity to add wood and light untouched, the architects added maple panels to the sides of the drawbridge and the ceiling. Generous windows on the walls that parallel the structure allay any "dark-corridor" feeling. Low-voltage downlights with decorative glass rings installed on the underside of the drawbridge light the ramp below.







The original intent of remodeling the house had little to do with accessibility issues: the client wanted more daylight, and more space. One of the solutions (above) was the baffled lightwell installed over the stairs. Elsewhere new dormers and glazed wooden doors add additional light.



Anmahian and Winton's client demanded a "solid, enduring house." The architects responded by specifying the best materials (right): custom-milled mahogany siding, bluestone, slate roofing, and lead-coated copper flashing.

the keys. Technical solutions should always become opportunities for architectural solutions."

Many of the solutions to the client's needs are remarkable in their simplicity, but they illustrate what is possible if architects are willing to go beyond catalogs to find solutions and think through, hour by hour, almost every thing disabled people must do to function in their daily lives: how they bathe, how they dress, get their meals and groceries, the movements they must make.

In fact, Anmahian and Winton's house may in some ways be more comfortable than normal for people who have no disabilities. The client's wife suggested a cabinet on the wall shared by the garage and kitchen. It opens to reveal a 4-in.-deep drawer. Groceries or packages (photo, page 121) can be loaded into the drawer, and slid into a space under the kitchen counter, where they can be unloaded. In the dressing room, closet rods inside the wardrobes are hung lower than normal, so that clothing is within reach, and drawers are at the base of the cabinets where the client can reach them easily (photo, page 121).

Because the allowable footprint of the building was too small to accommodate both a ramp from the garage into the house and a ramp from the garage into the basement, a hydraulic-operated drawbridge was fabricated to accommodate both (sidebar, opposite). In the master bath, the chore of getting in and out of the bathtub/shower has been eased by a special hanging door system (detail, page 120). Automatic door bottoms on all of the exterior doors of the house eliminate clunky door thresholds, and allow a tight seal against water and drafts. In the garage, a narrow overhead door allows access for the client's hybrid hand-powered tricycles (photo, page 116) and his wife's regular bike so that the double garage doors don't have to be opened every time the bikes are used.

Anmahian and Winton's client wanted to live in a "normal house," but changing levels without ramps in a building that would start out as a three-story house (but would end up as a four-story house) was impossible without the use of an elevator. This was one of the sole institutional concessions, yet the elevator is still disguised as much as possible. The door frames were detailed to receive wood trim, and there are no floor markers or up/down indicators. Just a single call-button. Trimmed out, the elevator doors look like closets.

Among the more complex structural maneuvers was the underpinning of the existing footings and foundation walls so that new footings and foundations could be installed for a recirculating lap pool. To accommodate the depth and loads required for the pool, pumps and

1. *Drawbridge*
2. *Stairwell (skylights over)*
3. *Elevator penthouse*
4. *Balcony*
5. *Basement*
6. *Entry hall*
7. *Studio*





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BASEMENT

1. *Bicycle garage*
2. *Garage*
3. *Drawbridge*
4. *Pass-through between garage and kitchen*
5. *Dining room*
6. *Living room*
7. *Family room*
8. *Pergola/ramp to yard*
9. *Elevator*
10. *Pool room*
11. *Workshop*
12. *Mechanical room*
13. *Studio*
14. *Bedroom*
15. *Study*
16. *Master bedroom*
17. *Dressing room*
18. *Master bath*
19. *Sitting room*





The shower: Very clean details. In the master bath suite, the solution to getting in and out of the combination shower and bathtub without having to slide over sharp shower-door tracks was to have the 200-pound hanging glass doors drain into a flat, polished stainless-steel plate (right) that has continuous slots cut into it. (The weight of the doors keeps them from swinging from the force of the 60-gallon-per-minute waterfall that cascades from the long horizontal slot in the headwall, and a micro-switch keeps the water from running unless the doors are closed.) The water simply drains into the channels, down through passages to holes in the side of the tub. The client says sitting under the waterfall is the perfect antidote for a stiff neck.

machinery, the new foundations were some 17 feet below grade. "The pool was also an idea that wasn't in the original program," says Winton. "But it turned out quite nicely, despite the fact that we had to excavate almost every square foot of the site to put it in." Glazed wooden doors allow access to a small patio outside the pool room.

Not every person can afford all of the accessibility features contained in this house. But disabled clients should engage the architect's ability to be creative in designing environments that not only make living easier, but give them space that is enjoyable to live in as well. As the owner himself suggests, "I think there are a couple of lessons that come out of the house that are kind of useful to play back to people.

"One is the collaboration between the client and the architects. I think that there's lots of talk about that, and I'm not sure that it really happens as easily as it did on this project. With a house, it's your life unfolding. And you end up having a very personal relationship with your architect. It's very important for the architect to take your input and turn it into things that do the job, and that they understand the things that need to be done. The one thing that my architects didn't do according to the spec that I gave them was that the quality level was dramatically higher than I asked for. It cost more than what I wanted, but to some extent, I'm finding myself appreciating things that I didn't appreciate to begin with."

But the client also says the house stands on its own as good architecture, even without considering the special features that make life easier for him. "The house has 16 rooms, but more like 25 experiences to have; places to be with all the decks and so forth. The accessibility items and how we incorporated them are one aspect of the house. But all the other elements of the house really had nothing to do with any kind of





Wardrobe drawers (above) are located near the floor, and door pulls and clothing are positioned within easy reach. Accessibility design involves thinking out every movement the client would make through the day.



The brainchild of the client's wife, a pass-through (right) connects the garage to the kitchen, to ease the unloading of groceries and other items from the kitchen to the car, and vice-versa.

physical handicap. I think it's really important that the spirit of the house play an important role when we discuss it, as opposed to, 'Here's a really cool house with all kinds of accessibility stuff.'

"The issue we started out with was light," he reiterates. "How are we going to increase and make sense of daylight in the house? And to me the incorporation of the skylights and the way that the architects did it, gives it this gentle, warm glow of light all throughout the house and with the dormers. But because of all the baffles, it isn't what people would consider a skylight at all—it's more like a lightwell.

"And so the house has five dormers and two skylights, and lots of glazed doors and outdoor patios. And that desire for light really drove the entire design. That's where it all started, with the addition and putting the lightwell over the stairs. It's one of those things that is so subtle that you don't notice it after awhile. But it works and it's something that I enjoy very much."

Some elements of the design simply offer tactile pleasures. "The waterfall in the bathroom has nothing to do with my handicap. It's just something to enjoy. Both my wife and I work with computers all day long, and our necks get stiff. And, guess what, when people come over they say, 'I've just gotta try it,' because everybody's neck gets stiff.

"People inadvertently wind up focusing on the accessibility things done in a space. To me the best accessibility things are done in a way so that I don't have to see them. I don't want to feel there are barriers so, frankly, I can just enjoy my home. We tore down half of the house in part because it was a foot and a half different in height. It had a ramp when we bought it, and a foot and a half doesn't sound like much but if you have to go up and down it many times during the day with a baby on your lap, it's a huge deal. There are some things whose goal is to be transparent, and other things whose goal is to be the life of the house." ■

Project: *Cambridge Residence Cambridge, Massachusetts*
Owner: *withheld*
Architect: *Anmahian Winton Architects—Alex Anmahian, Nick Winton, partners-in-charge; Scott Brown, Katarina Edlund, staff*
Interior Designer: *Repertoire—Celeste Cooper; Classic Restoration—Peter Labau*
Consultants: *Gregorian Engineers (structural); Atlantic Heating and Air Conditioning (hvac); Gillespie Corp.—John Linsley (hydraulic lifting ramp); Ripman Lighting Consultants—Chris Ripman (lighting); Chimera Designed Lighting—Michael Eberle*
General contractor: *M.F. Reynolds*

Manufacturer's Sources:
Elastomeric roofing: *Firestone*
Casement windows: *Duratherm*
Double-hung windows: *Pella*
Hydraulic elevator: *Beckwith Elevator*
Hydraulic ramp: *Gillespie Corp.*
Skylights: *Wasco*
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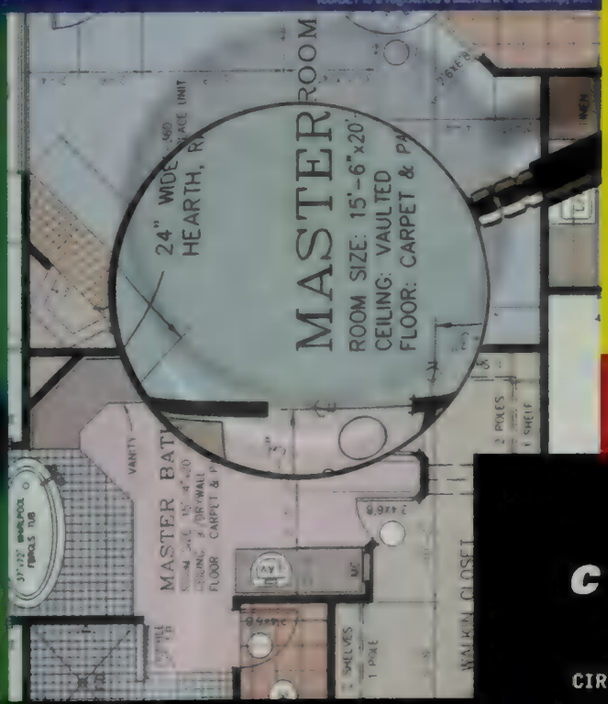
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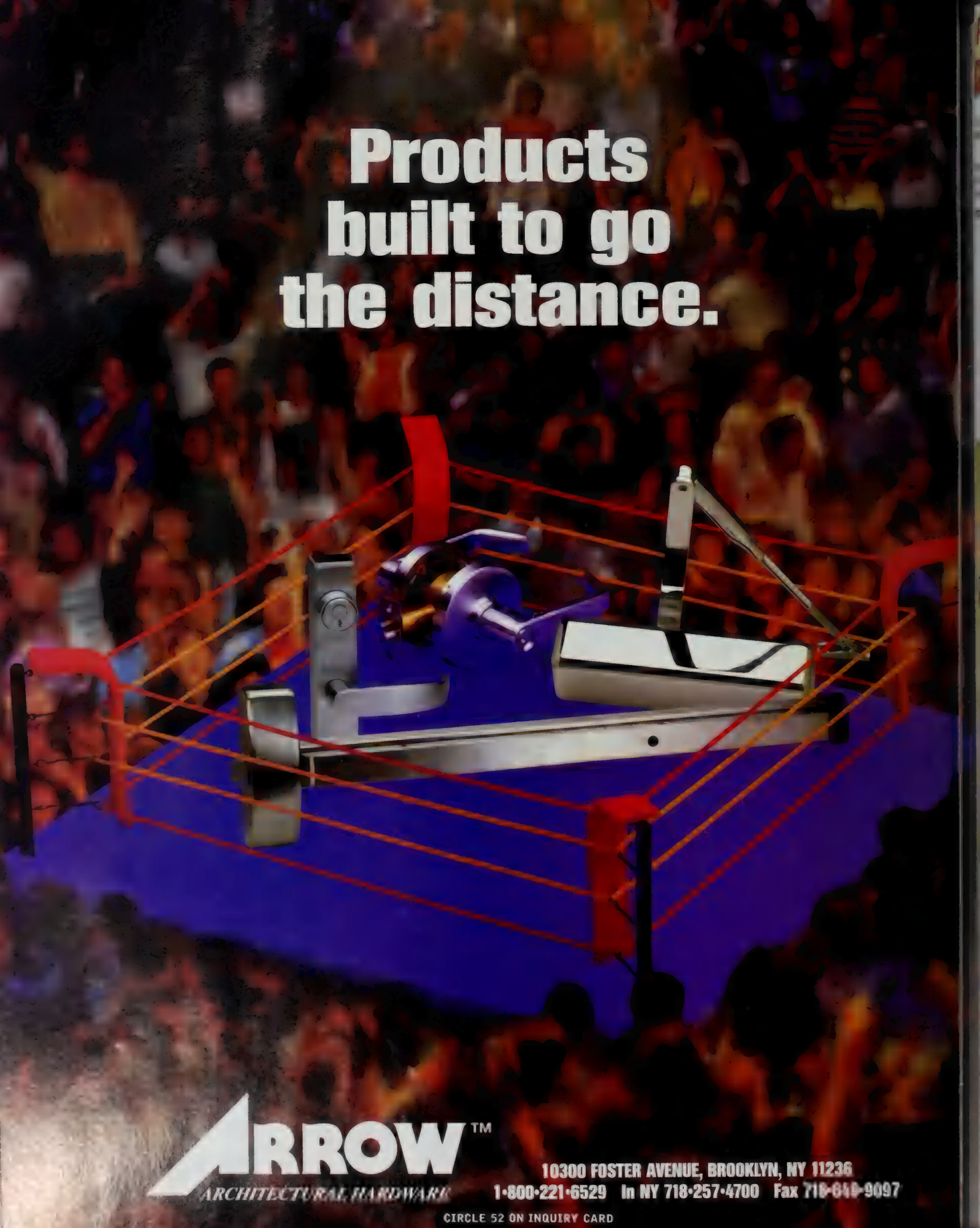
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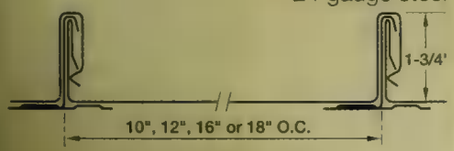
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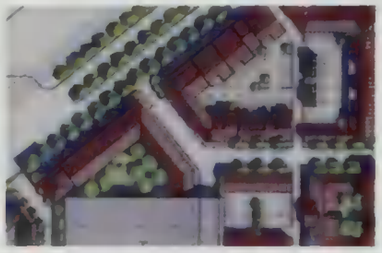
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1

Miami

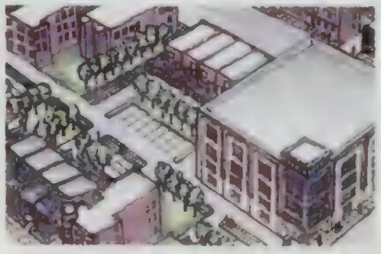
The Hometown Plan by Dover, Kohl & Partners aims to transform a deteriorating South Miami area into vibrant mixed-use neighborhoods.



2

Ecuador

Using canals as water-retention devices, Correa Valle Valle of Miami have planned a new community near the port city of Guayaquil.



3

Detroit

In the Weber Block, the firm Archive D.S. is upgrading existing housing and adding new live-work lofts to a tough part of town.



4

Mercer Island

Just outside Seattle, Lennertz Coyle & Associates is bringing some urban values to a place known for its suburban strip development.



5

Chicago

Farr Associates is reviving the Parkside neighborhood by playing on its strengths: access to mass transit and a location next to Garfield Park.

For a decade or so, the New Urbanism was the province of just a handful of practitioners—most notably Andres Duany and Elizabeth Plater-Zyberk in Florida and Peter Calthorpe in California. From the start, their projects—among them Seaside (in the Florida panhandle), Kentlands (outside of Washington, D.C.), and Laguna West (near Sacramento, Calif.)—were the focus of one of the most intense debates in the planning profession. Some critics hailed these new "traditional towns" as the next great places to live, while others dismissed them as artificial communities dressed up in historicist architecture. Many in the profession saw them as a passing phase, assuming the New Urbanism would go the way of Deconstructionism. It did not. Instead, the ranks of traditional town planners continue to grow.

A new generation of New Urbanists is coming of age. No less fervent or idealistic than their mentors, these latter-day New Urbanists carry the movement's banner but are unafraid to diverge a bit. Responding in part to criticism that the first wave of New Urbanist projects were mostly middle-class, suburban developments comfortably buffered from the hard realities of urban America, the second generation of New Urbanists (as well as many of the first generation) are now applying the principles of traditional town planning to a wider range of projects—including ones in the inner city and third-world countries.

And as public policies shift and governmental entities ranging from small towns to state planning departments to the U.S. Department of Housing and Urban Development start to question post-war Modernist planning principles—these younger New Urbanists are helping to set the agenda for the next century. Their clients range from federal agencies to what architect Victor Dover of Miami calls "the regular, just-walking-around folks."

Although the New Urbanists are anything but a homogenous group, they share a common set of ideas that they agreed on in a 1991 document known as "the Ahwahnee Principles." Named for the historic lodge in Yosemite National Park where the planners met, the principles state that planning "should be in the form of complete and integrated communities containing housing, shops, work places, schools, parks, and civic facilities," and that these activities should be "within easy walking

Beth Dunlop, RECORD's Miami correspondent, has written four books on architecture. Her most recent titles are Building A Dream: The Art of Disney Architecture *and* Miami: Trends and Traditions.

distance of each other" and "of transit stops." The document goes on to say "a community should contain a diversity of housing types to enable citizens from a wide range of economic levels and age groups to live within its boundaries" and "should contain an ample supply of specialized open space in the form of squares, greens, and parks." In addition, the principles call for networks of streets and paths that encourage pedestrian and bicycle activity and for the use of greenbelts and wildlife corridors to define the edges of communities and protect them from development.

Latest projects address key complaints

The new wave of New Urbanists is just beginning to move from drawings to construction. But many of the latest projects address complaints made by critics of the movement's early work: that all too often plans were made for "greenfield" sites beyond existing urban cores, that low-income groups were given only lip service, and that practitioners dealt mostly with private developers and only rarely with public housing.

Consider these examples of work from second-generation New Urbanists. The five-year-old Portland firm of Lennertz Coyle & Associates recently worked on the 1995 revision of the Oregon Transportation Planning Code, setting forth principles to determine which streets should have strong retail and commercial orientation and which should be parkways. Dover, Kohl & Partners of Miami has done an urban-infill plan for what Victor Dover calls "the hardscrabble-poor" downtown Orlando neighborhood of Parramore. Rick Williams of Van Meter Williams Pollack in San Francisco is using the tenets of the New Urbanism to grapple with ways to rework tough public housing projects (in such places as South-Central Los Angeles), and he is taking a similar approach on the "campuses" of some of California's big biotech companies; in both cases, he is bringing things down to a more human scale and creating a clearer definition of public and private space.

Portland architect William Lennertz, who as a former project manager for Duany and Plater-Zyberk (DPZ) shepherded such communities as Seaside and Kentlands from sketches to construction, says he sees fewer "greenfields" planning projects in the future and a greater emphasis on work in central cities (as is going on in cities ranging from Providence, R.I. to Cleveland to Los Angeles). "What I have learned," says Lennertz, "is that Oregon is now confronting problems that the rest of the country will soon have to confront. The battles we have to fight are set out before us in our existing urban fabric, in our suburbs, in towns with main streets that have become state highways, in big-lot residential areas that will have to diversify to survive. I know that there's a tremendous appetite and need for communities, real communities, out there among the populace."



Two by Dover, Kohl: Okeechobee, Fla. (above) and Rustville & Fort Negley (below) in Chattanooga, Tenn.

Having preached the need for new planning and zoning codes that allow apartments to be built above stores, granny flats to be included in single-family homes, streets to be narrowed, and other such "neo-traditional" devices, the New Urbanists won over a growing number of city and state officials during the 1980s and early 1990s.

Now they are starting to win important friends on the federal level as well. At the U.S. Department of Housing and Urban Development (HUD), for example, several programs have now adopted the tenets of the New Urbanism. "As we move forward on public housing, demolishing high rises, reducing densities, and creating mixed-income environments and really livable communities, we are embracing New Urbanism," states Marc Weiss, special assistant to HUD Secretary Henry Cisneros. "It's not just a style," says Weiss. "What the New Urbanism is really about is community planning and urban design, and it is a really good approach not just for transforming public housing but for rebuilding cities in general."



When HUD began to explore New Urbanist principles, looking into new ways to replace or revamp public housing projects and renew dangerous, derelict neighborhoods, it was "first generation" architects such as Ray Gindroz, AIA, of UDA Architects in Pittsburgh who took up the challenge. But as the work in transforming public housing and rebuilding inner-city neighborhoods filters out, it will often go to the younger firms. "Certainly we have planted a lot of seeds at the local level," says Weiss.

To date, the second generation of New Urbanists has worked with far less fanfare than the first; often, the jobs they take have been less glamorous than say, Seaside, and on a smaller scale—fixing up a main street in such decidedly

Lennertz Coyle & Associates' plan for Bend, Ore., turns a parking lot into a new civic square (below). Van Meter Williams Pollack redesigned outdoor spaces at Genentech's campus in South San Francisco (opposite top). Looney Ricks Kiss designed rowhouses at Harbor Town in Memphis (opposite bottom).



unsexy places as Fort Pierce, Fla., a current project of Dover, Kohl, or the Weber Block in Detroit, a small urban infill housing project that Archive D.S. has under way.

More projects are downtown

Indeed, much more of the work now being done in the name of traditional town planning (another moniker for the New Urbanism) is in inner-city areas. Much of what is being done, too, is fixing places that went wrong, imbuing them with the movement's idealism, rather than creating new idealistic towns from scratch.

"It's fundamental," says Richard Bernhardt, planning director for the city of Orlando, Fla., where the codes include traditional city design standards and where Dover, Kohl's plan for revitalizing the downtown neighborhood of Parramore paved the way for two additional in-city traditional town planning projects being done by other firms. "It's building a community, not just a development project," asserts Bernhardt. "It is mending the community, putting it back together." Often it is work that, as Victor Dover says, requires "surgical skills" such as filling in parking lots rather than demolishing the existing urban fabric.

Says J. Carson Looney, AIA, of Looney Ricks Kiss of Memphis: "We do some land planning, but the majority of what we do is take an existing land plan and fix it and then do the architecture."

If the earliest New Urbanists were fairly orthodox about its terminology and methodology, they have also had to be the standard-bearers. "We are more formal and focused on the recipe," says Jaime [illegible]. "We can afford to be less rigid, less reflective and more [illegible]." His firm, Correa Valle Valle, has created a model code for the environmentally precarious Florida Keys that stretches the New Urbanist planning lexicon to include such offbeat (but useful) terms as "hamlet" as a zoning type.

In their work in South and Central America, Correa Valle Valle have found themselves working with new governments and having to persuade entrenched military establishments to embrace their plans. Williams, working with public housing tenants, has to summon all his persuasive powers as well. "We do enjoy working on complex projects," says Williams, "but they can't always be as pure. In some ways we can't be as philosophical about it. We're trying to work on projects that have a lot of issues—social issues, philosophical ones, financial issues—and you can't solve them all with design."

Among this "second generation" of New Urbanists there is a growing understanding of the nuts and bolts of the development process. For example, Looney Ricks Kiss uses Jim Constantine, a market research expert from New Jersey, as a "front man," to determine what will be acceptable to potential buyers. For example, Constantine did market-preference surveys for a new town near Austin, Tex., that Looney's firm is designing. The surveys helped determine which types of houses and what elements of the town would be built first. Says Looney, "We've got to make sure we look at the reality. You've got to take what is good philosophically and make it apply. But if you don't get it built it's just a book."

Stylistically, this generation is a divergent group consisting of some diehard Modernists and some entrenched Classicists—with most falling into a historicist category somewhere in between. All of them, with no exceptions, express a debt to their mentors—particularly Duany and Plater-Zyberk and Calthorpe.

Though the call for traditional town planning expertise comes from all five continents, the younger New Urbanists also find work in their own backyards. Dover, Kohl, for example, has done a massive two-part "Hometown" plan for the town of South Miami, which includes a strategy for the incremental replacement of old-style public housing with a variety of lower-income dwellings, public and private. In true practice-what-you-preach fashion, the firm's office is over a shop on the town's main street. Similarly, Archive D.S. is at work on a series of new urban housing projects near the firm's office, a 1909 Daniel Burnham building in downtown Detroit.

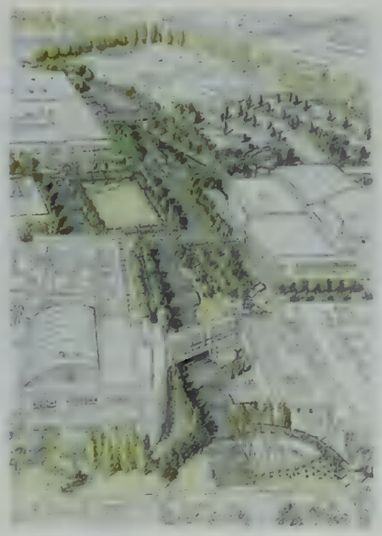
Having laid out the precepts of traditional town planning with some specificity in the Ahwahnee Principles, the movement has taken on the ways of a formal organization with the founding in 1993 of the Congress for the New Urbanism, chaired by Plater-Zyberk and run by designer/author Peter Katz.

For sake of definition, one might group as "first generation" New Urbanists such architects as Stephanos Polyzoides and Elizabeth Moule of Los Angeles, Dan Solomon of Berkeley, Ray Gindroz of UDA Architects, Robert A.M. Stern, FAIA, of New York City, and Jaquelin Robertson, FAIA, of New York City, almost all of whom have been involved in one or more aspects of traditional planning since the mid 1980s.

Working with, rather than against, each other

A mark of the movement, however, is its collegiality. "We constantly work with each other. This whole thing is a big soup," says Duany. And indeed it is. DPZ, for example, worked on the initial planning phases of Celebration, the Walt Disney Co.'s new town near Orlando that was eventually planned by Stern and Robertson. Gindroz, however, wrote Celebration's Pattern Book, which offers the town's architectural code, and Looney is designing dozens of houses for Celebration using the Stern/Robertson plan and the Gindroz pattern book. Dover, Kohl and





Correa Valle Valle from Miami worked with Mark Schimmenti and town planner R. Geoffrey Ferrell, both DPZ alumni, to do a plan for Riviera Beach in Palm Beach County, Fla.

It is a missionary movement, in many ways. The list of believers includes such mayors as Joseph Reilly of Charleston, S.C., Jon Norquist of Minneapolis, and Dennis Archer of Detroit, and countless zoning and planning officials from all over the country, most of whom avidly spread the word at conferences, in lectures, and even on the Internet. One such example is Demitri Baches of Belmont, N.C., who has put his town's entire zoning code (a Traditional Neighborhood Development code) onto the Internet (http:/www.sips.state.nc.us/Belmont/planning.htm) to be downloaded free by anyone who has Microsoft Word for Windows and enough computer capacity. A number of municipalities also have Websites from which town plans can be downloaded or printed out: two such places are the new town of Fairview Village in Portland, Ore., (http:/www.fairviewvillage.com) and the existing community of Mercer Island near Seattle (http:/www.halcyon.com/mmatt//mihome.htm), both designed by Lennertz Coyle.

"People who have problems with the whole New Urbanist movement have the feeling that it's incredibly one-dimensional, and when you look at the pictures, they can seem one-dimensional and suburban," says Williams. "People will say the problem is that it hasn't been inclusive enough, that it doesn't include, for example, low-income housing. But in fact, it does. We just have to enrich the vocabulary."

The "second generation," if you will, includes architects who may have been at work in the 1980s but usually for other architects, learning at the side of Calthorpe or Duany and Plater-Zyberk. Indeed, charting the growth of even this young movement (Seaside was born in the late 1970s, but the term New Urbanism wasn't coined for another decade) takes the skills of a genealogist.

Victor Dover and Joe Kohl, for example, came to the University of Miami in 1985, then founded a firm that does graphic imaging on computers ("We thought if we could get people to visualize, they'd stop making such bad decisions," said Kohl). Eventually, they went back to the University of Miami and were among the first graduates of the school's Suburb and Town Planning Program (founded by Plater-Zyberk and Duany), then opened their own firm.

That firm was initially a four-way partnership with Jaime Correa and Erick Valle who now, along with Estela Valle, have their own firm. Correa had come to Miami in 1979 as a young architecture graduate seeking work with Arquitectonica; but when he got there with a portfolio full of urban design work, he was dispatched to the newly founded DPZ (Duany and Plater-Zyberk had just split off from Arquitectonica) where he was put to work on a project called Seaside.

Erick Valle, who was born in Costa Rica, is a University of Miami graduate with degrees in architecture and suburb and town planning. Estela Valle is a Cuban refuge who came to Miami in the Mariel boatlift; she worked for DPZ for eight years before joining her husband and Correa.

Lennertz of Lennertz Coyle of Portland, had Duany as his Harvard thesis advisor then eventually went to work for DPZ. Ultimately, he moved to Portland, where he linked up with Steve Coyle.

Rick Williams, whose firm is Van Meter Williams Pollack in San Francisco, took a course taught by Calthorpe at the University of California at Berkeley, and then went on to work for him.

But if many of the new New Urbanist firms have not fallen very far from the family tree, others came into it all on their own. The partners in Archive D.S.—Mark Nickita, Dorian Moore, and Kevin Borsay—and Carson Looney in Memphis, for example, looked at cities and places they loved, figured out what made them great, and incorporated those ideas into their own designs. Only later did they discover there were planners and architects around the country working the same vein.

At a time when many architects are still struggling to get work, most of the New Urbanists—of both generations—are quite busy. With government agencies from local planning offices to HUD increasingly receptive to New Urbanist principles and clients in foreign countries as far away as India and Japan, demand remains strong for the services of New Urbanist planners—perhaps strong enough to launch a third generation. ■



1 Hometown Plan South Miami, Florida

DOVER, KOHL'S PLAN FOR AN INNER-CITY AREA CALLS FOR MIXED-USE DEVELOPMENT AND PEDESTRIAN ACTIVITY.

Project: *Hometown Plan, South Miami, Florida*
Clients: *South Miami Hometown, Inc. (nonprofit); City of South Miami; State of Florida Energy Office*
Planner/architect: *Dover, Kohl & Partners (Phases I and II)—Scott Boe, Marice Chael, Victor Dover, Jason Dunham, R. Geoffrey Ferrell, Douglas Frost, Robert Gray, Steve Hafer, Ross Halle, Mimi Kelly, Joseph Kohl, Barbara Lamb-Ortega, Cristina Lopez, Miriam Tropp, Kevin Young, project team*
Consultants: *Holland & Knight (legal, Phases I and II); Barton Aschman Associates (transportation, Phases I and II); Judson & Partners (neighborhood liaison, Phase II)*
Financing: *Upfront costs raised by South Miami Hometown, Inc., mostly from commercial property owners, matched by the City of South Miami and the State of Florida Energy Office. Street improvements are being made incrementally by the City of South Miami, funded in part by a special gas tax. Sunset Drive improvements are being paid for by developers in exchange for exceptions to regulations.*

Projects written by Clifford A. Pearson.

Project area
55 acres (28 city blocks) for Phase I; 350 acres (86 blocks) for Phase II.

Major components, Phase I
Retail development (504,000 sq ft), restaurants (21,400 sq ft), offices (377,500 sq ft), cinemas (20,000 sq ft), civic buildings (28,225 sq ft), hotel (75 rooms), apartments (568 units), single-family houses (39 units).

Existing conditions
A public-private collaboration, the Hometown project calls for the redevelopment of an aging, mostly African-American district in South Miami. Although scarred by dilapidated buildings and oversized parking lots, the area has a Metrorail station, a good street grid, some historic buildings, a close-in location, and an intact sense of community. The South Dixie Highway cuts through the area, separating Phase I to the south from Phase II to the north.

Major tasks, Phase II
Narrow car lanes, widen sidewalks, and plant trees on median and sidewalks on Sunset Drive; encourage development of larger, mixed-use buildings on Sunset Drive; encourage development of infill projects; encourage development of a greater mix of housing types; reconfigure existing public housing complex over time, replacing "campus-style" buildings with more traditional buildings that have individual street addresses and defensible outdoor spaces (drawings, right).

Design/planning approach
The planners set out to reinforce the sense of distinct neighborhoods—one south of South Dixie Highway and two north of it. The project calls for redeveloping the main shopping street, Sunset Drive, to create a more pedestrian-oriented experience. To do this, sidewalks will be widened, car lanes reduced, and mixed-use buildings erected. In an important break with Modernist planning, the project replaces land-use zoning with design conventions. This change allows greater flexibility in the uses of buildings, but stipulates the placement of buildings on their sites (pushing them to their main street fronts), location of parking (usually behind buildings), minimum building heights (to create a uniform street wall), and use of arcades and porches.

Project status
Public charrettes were held in 1992 and 1994, and the Hometown District Overlay Ordinance was adopted in 1993. Street improvements are going ahead, while the city is working on a model block and developers are starting projects, the largest being a $200-million retail center.



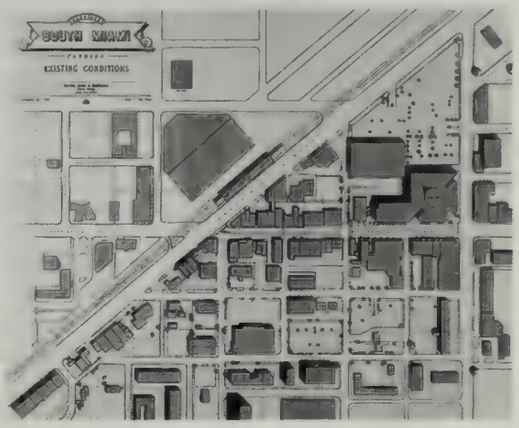


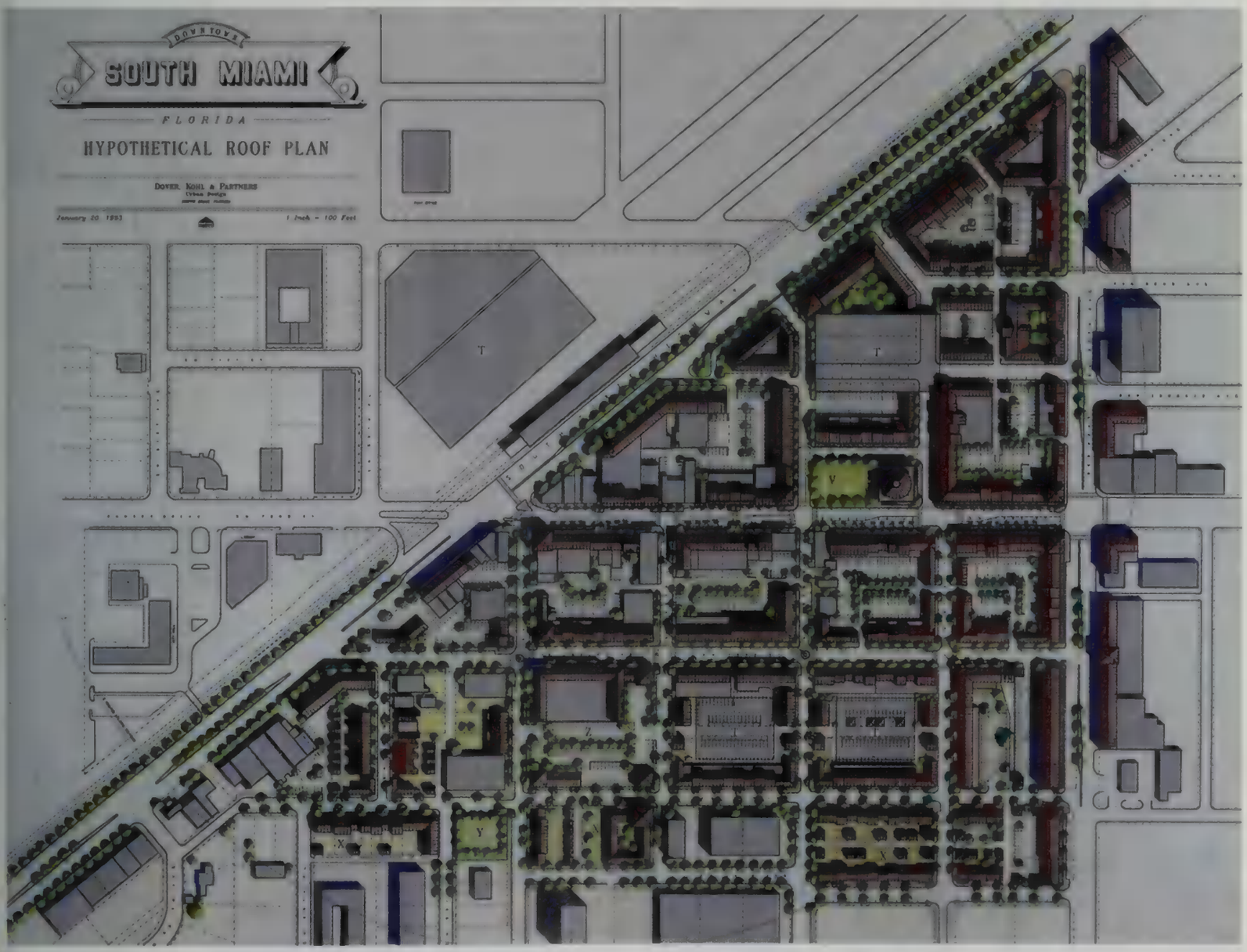






Computerized image (left) shows planned improvements for a demonstration block, including wider sidewalks, new trees, and larger buildings fronting the street.





Site plan (top right) shows existing conditions in Phase I, and large plan (above) shows hypothetical build-out of Phase I.

2 Incae Neighborhood Plan Guayaquil, Ecuador

A NEW TOWN BY CORREA VALLE VALLE WILL OCCUPY A SERIES OF ISLANDS SURROUNDED BY CANALS.

Project: *Incae Neighborhood Plan, Guayaquil, Ecuador*
Planner: *Correa Valle Valle, Inc.—Jaime Correa, Erick Valle, Estela Valle, Eduardo Chamorro, Manuel Fernandez-Noval, Charles Barrett, project team*
Architect-of-record: *Eduardo Chamorro, Architect*

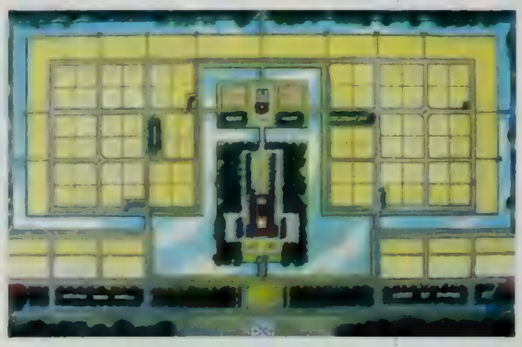
Project area
125 acres of development on a 180-acre site.

Major components
The masterplan covers the design of a new community 10 miles from downtown Guayaquil and includes six development areas with a variety of uses, such as residential, sports, educational, and commercial. Most of the areas are on islands surrounded by littoral canals and waterways.

Design/planning approach
A 30 percent water-retention-coverage requirement was a driving factor in the design of this self-sufficient community outside of the port city of Guayaquil. Turning the requirement into a major feature of their design, the planners surrounded various neighborhoods with canals, lakes, and waterways. Six areas of development are included in the town: two residential neighborhoods on individual islands, a community meeting hall and sports complex on another island, a university campus on a fourth island, a retail/office/residential area along an adjacent highway, and a park bordering the town.

Historic precedents
The design of the community is based on the ancient Laws of Indies. Square blocks of 100 meters (330 ft) in each direction define a network of smaller blocks and streets where paved plazas and *plazoletas* are interwoven to provide a variety of public outdoor spaces and offer views of civic buildings. The design of the university building emulates the courtyard organization of traditional monasteries found in Guayaquil and has a rear loggia offering views of the mountains. In residential areas, only one building type—the courtyard house—is used, as is customary in this part of South America. This kind of house, though, has long proved to be flexible, allowing production of large, medium, and small houses next to each other. The masterplan also follows the local tradition of land subdivision, which prohibits the joining of adjacent lots, while encouraging their subdivision into smaller pieces. The rule accommodates growing and extended families.

Project status
Ground-breaking is scheduled to start in December 1997 and construction will continue for about 10 years. A "town architect" will be named by the Incae soon and will be in charge of implementing the masterplan.





The centerpiece of the new community is an academic island with a university campus (in center of plan, left). The $2.5-million school will be 80-percent subsidized by the Ecuadorian Family Trust Fund. The first building at the university (opposite bottom) will have a courtyard organization like those at monasteries in Guayaquil. A loggia on the rear of the building (left bottom) will provide a covered space for students.



Directly behind the university is an island with a meeting hall and sports fields (drawing left). On either side of the school are square islands with residential neighborhoods. Funding for these neighborhoods will be provided by private developers and property owners. Each neighborhood is organized into blocks measuring 100 meters by 100 meters (330 ft by 330 ft) and has just one building type, the courtyard house, which can be built in a variety of sizes.



3 The Weber Block Detroit, Michigan

IN A TOUGH NEIGHBORHOOD, ARCHIVE D.S. IS INTRODUCING LIVE/WORK LOFTS TO ADD DIVERSITY.

Project: *The Weber Block, Detroit, Michigan*
Client: *Midtown Development Group, Inc.—Robert Slattery, president*
Planner/architect: *Archive D.S.—Mark Nickita, Dorian Moore, design principals; Kevin Borsay, principal; Marcus Colonna, design assistant*

Project area
15.4 acres (four city blocks).

Major components
Renovation and new construction including: 80 infill rowhouse dwelling units, 30 live-work lofts, 50 apartments, and 13,000 sq ft of commercial space.

Existing conditions
Located in the Willis/Seldon Historical Resources District in the Cass Corridor, this project is in one of Detroit's most decayed and economically depressed areas. Although characterized by urban blight, the area—like many other inner-city neighborhoods—is equipped with the utilities, parks, clearly defined commercial districts, and other infrastructure that are integral parts of New Urbanist planning. Most of the existing structures are brick apartment buildings and wood-frame residences. "The challenge comes from weaving in the new with the existing to create a seamless whole," says architect Mark Nickita, an Archive D.S. principal.

Design/planning approach
Because security is a key concern in this economically depressed part of town, the project is designed as a series of what the planners call "hardened blocks" with solid lines of buildings fronting directly on the street. By providing a limited number of access points to its internal organization, the hardened block allows residents to take control of their environment. Cutting through the center of the block is an "internal street" that is a pedestrian-scaled spine providing access to parking and landscaped areas in which residents can gather. At certain locations along the perimeter of the blocks, suspended-metal panels act as screens for parking lots and can be sold as billboards to provide an extra revenue source.

Building types
An important aspect of the project is its use of three kinds of residential/office/loft buildings. The idea is that these mixed-use buildings will bring a diversity of activities and residents to the area. The largest of these buildings is a multi-unit structure (model photo, this page and item 5 on site plan, opposite) with retail or cafe space and internal parking on the ground floor, single-height living spaces on the second floor, and double-height units with sleeping lofts above. All of the units in the building can be used for living or working. Single-family rowhouses will also allow live/work situations in loft spaces, while townhouses will offer duplexes above flats.

Project status
Urban design began in 1996 and is being followed with architectural design development this year. Construction is scheduled to start in early 1998 with low-rise buildings to be completed by the end of 1998 and the multi-story loft building to be finished by September 1999.





Funding
About 70 percent of the money will be loaned by a local banking institution, while 25 percent will be public funds from the City of Detroit and the U.S. Department of Housing and Urban Development (HUD). About 5 percent of the money will come from nonprofit community groups.

Construction systems
Steel-frame for multi-story buildings; pre-engineered rigid steel-frame for low-rise buildings.



Drawing (left) and plan (bottom) show what the Weber Block would be like after new and renovated construction is completed. Plan (below) and photograph (opposite below) show existing conditions. Model (opposite top) is of multistory residential/office/loft building.





1. *Townhouse*
2. *Commercial*
3. *Rowhouse*
4. *Apartments (renovated).*
5. *Multistory lofts*

4 Mercer Island Town Center Mercer Island, Washington

ENHANCED MASS TRANSIT AND PEDESTRIAN-FRIENDLY SHOPPING ARE KEYS TO LENNERTZ COYLE'S PLAN.

Project: *Mercer Island Town Center Redevelopment, Mercer Island, Washington (just east of Seattle)*
Clients: *City of Mercer Island and Regional Transportation Authority of the State of Washington*
Planner/architect: *Lennertz Coyle & Associates—William Lennertz, principal-in-charge; Steve Coyle, principal; William Dennis, project designer; Laurence Qamar, designer*
Charrette team: *William Lennertz, Steve Coyle, William Dennis, Laurence Qamar, Randall Imai, Marcy McInelly, John Borofski*
Consultants: *Mark Hinshaw, Bill Williams, Gary Schaefer, Michael Steffen, C.R. Douglas (architecture and planning); Greg Easton, Norman Peterson (financial)*

Project area
60 acres (15 city blocks).

Major components
Redevelopment of a suburban commercial strip into a mixed-use avenue with pedestrian activity; two new public plazas—a Station Square and a Civic Square; new cross streets to reduce size of some blocks and facilitate traffic flow; new housing with a mix of apartments and townhouses; mixed-use infill buildings with retail on ground floor and offices or housing above.

Design/planning approach
A goal of this project is to convert a place known for sprawl into a more pedestrian-oriented, mixed-use downtown. Anchoring the north and south ends of the core area will be two new outdoor spaces. Taking a cue from the transit-oriented plans of first-generation New Urbanist Peter Calthorpe, this project originally proposed a new light-rail line that would run alongside an existing highway. The light-rail won't be built, but funding for a new trunk bus line was recently approved by the city. Retail and daycare at the Station Square, along with a cinema complex, new shops, and a hotel will turn the station into a hub of activity.

Pedestrian orientation
The plan also calls for transforming 78th Avenue—now a commercial strip of isolated stores and parking—into a tree-lined, pedestrian-oriented shopping street. New codes now require buildings on 78th Avenue to form a streetwall three- to five-stories high with ground-floor retail. Another important element is requiring parking to be placed behind the buildings on 78th Avenue, instead of in front.

Process
Begun in late 1992, the project brought together government officials, planners, architects, landowners, developers, economic and market analysts, and citizens-at-large. The first step was a series of discussions of planning, research, and education issues culminating with a five-day design charrette in May, 1993. This led to the drafting of a comprehensive plan, which was completed in November, 1994, and includes strategies for future growth, and the rewriting of the city's zoning code.

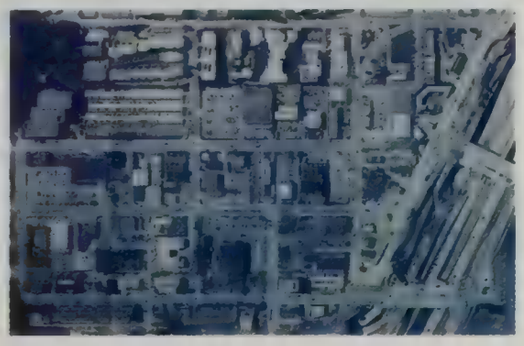


Project status
Street improvements have been made to 78th Avenue and developers are beginning to work on new buildings here. The city has adopted the new urban code and recently passed a rail and bus measure that will fund a new trunk bus line and the construction of a new station and parking structure.





New public spaces include Station Square (left) with retail, offices, and a hotel, and Civic Square (opposite top) which has a theater and post office. Photo (below) shows existing conditions; plan (opposite) shows new development. Plans call for 78th Avenue (bottom) to be a shopping street.





5 Parkside Chicago, Illinois

FARR ASSOCIATES HAS DESIGNED A SAFE COMMUNITY LINKED TO A REVIVED ELEVATED RAIL LINE.

Project: *Parkside, Chicago, Illinois*
Client: *Bethel New Life, Inc. (nonprofit developer)*
Planner/architect: *Farr Associates—Douglas Farr, Patrick Thornton, George Koukourakis*

Project size
11 acres (two city blocks).

Major components
Redevelopment of an inner-city neighborhood with 89 new residential buildings and 35 renovated residential buildings.

Existing conditions
A high-crime neighborhood in the West Side of Chicago, Parkside has some important assets, including: being next to Garfield Park and along the city's Greenline elevated rail. In 1993, the city agreed to renovate the Greenline and help turn the Lake-Pulaski area (of which Parkside is a part) into a mixed-use transit-oriented development [RECORD, June 1994, page 86].

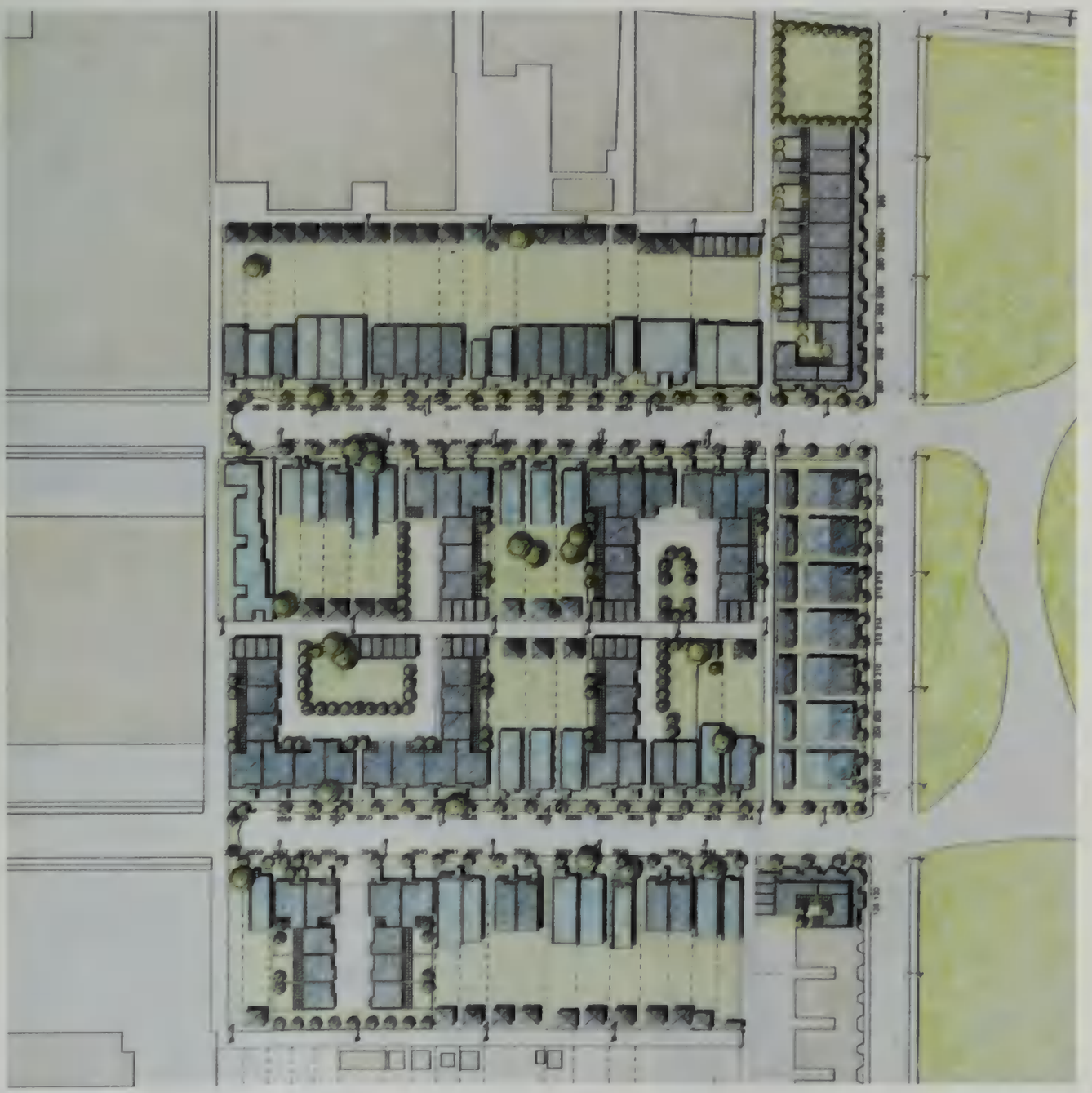
Design/planning approach
Using a participatory design process that involved local residents, Farr Associates devised plans for what it calls a "focused community redevelopment" that includes owner-occupied housing for a variety of income groups and defensible space throughout. New infill housing is sympathetic in scale and materials to existing housing stock in the area and is clustered around shared green space and secure on-site parking. The largest and most expensive homes face Garfield Park, while moderately prices homes are on the avenues, and the least expensive ones face the private green spaces. Two streets in the project are being turned into cul-de-sacs to reduce traffic conflicts with adjacent transit maintenance facilities and eliminate drive-through traffic, much of which had been drug-related. The masterplan is broken down into 10 separate sites so it can be built in phases. Each phase has hard costs of $1.35 million.

Project status:
Community organizing and participatory planning sessions were held in 1995 and construction of the $15.3-million project is set to proceed from 1998 to 2002. Financial assistance to homeowners is coming from the City of Chicago, low-interest loans from local banks, and downpayment help from various grant pools.





After helping to convince the Chicago Transit Authority to renovate and not tear down the elevated Greenline and then working on plans for the Lake-Pulaski district along the line (site plan, opposite), Farr Associates developed plans for the Parkside neighborhood (left and below). Owner-occupied buildings wrap around defensible common spaces at Parkside.



In Association With AIA/Architectural Record Continuing Education
Marvin Windows & Doors Presents . . .

HIGH PERFORMANCE FROM START TO FINISH

An Evaluation of Clad Finishes on Windows and Doors



A leading manufacturer of architectural windows and doors, Marvin uses high performance coatings on all its extruded aluminum clad products. This finish, made with fluoropolymer resin, is highly resistant to scratches and abrasion as well as color fading and chalking. In fact, it was developed to meet or exceed the most stringent performance tests set forward by the American Architectural Manufacturers Association (AAMA).

Marvin uses the highest performing clad and coating system available to provide a finish that lasts. Architects rely on industry standards to substantiate a manufacturer's claims. With an independent set of standards, architects can feel confident that the product they choose will meet or exceed their specifications.

Marvin offers the proof here in a detailed explanation that strives to educate architects and others in the intricacies of paint finishes offered on aluminum clad products.

MARVIN
WINDOWS & DOORS

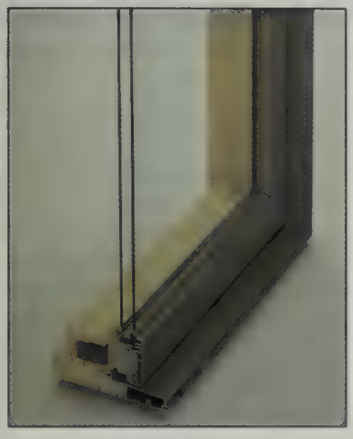
To fulfill your free AIA continuing education learning credits by reading this section, examining the learning objectives, and completing the questions on page 150. Then just fill out and return the self report form on page 230.

Learning Objectives

After reading *High Performance From Start to Finish: An Evaluation of Clad Finishes on Windows and Doors* and completing the exercise, you will be able to:

- Cite three factors to consider when evaluating the coating systems of extruded aluminum clad windows and doors.
- Compare two major standards for sprayed finishes on extruded aluminum clad windows and doors.
- Explain at least three performance enhancing processes or tests and their application to this specific product.

Aluminum-clad window systems for residential and light commercial buildings have increased in popularity over the past decade. This trend is not surprising, considering the constant search for durable products that require low maintenance. As demand has risen, manufacturers have met the challenge by offering new and better systems, with particular emphasis on improving the finishes that coat the aluminum. Now, the specifier of clad window systems has a wide array of choice. Today, therefore, the most difficult question is how to judge the differences in coatings and their effectiveness on aluminum clad window systems.

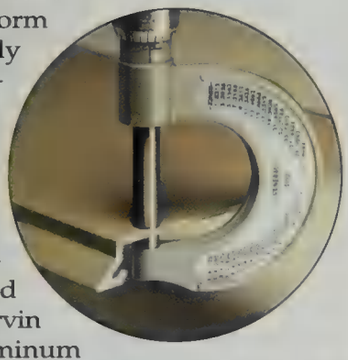


Three factors are seen as paramount:

- The quality of — or the type of — aluminum substrate that the exterior sash, frame, and muntins are made of;
- The quality of coating applied to the aluminum substrate; and
- The process by which the coating is applied.

Type of Aluminum Used

First, the aluminum substrate. Aluminum put through an extrusion process usually ranges in thickness from .050 inch to .065 inch, compared to roll-form aluminum that typically is only .030 inch in thickness. The additional thickness means significantly increased resistance to abrasion and unwelcome impact. Some products incorporate both extruded and roll-form aluminum. Marvin uses only extruded aluminum on its clad products, which significantly enhances performance, color uniformity, weatherability and durability.



Types of Coatings

Second, the quality of coating. Typically, coatings for aluminum building products consist of pigment for color, resin to bind the pigment to the substrate surface, and solvent to allow liquid consistency in application. This coating is sprayed onto the surface and then the substrate is baked. In the process, the solvent is released, or burned off, and the resin's molecules surround the pigment molecules and bind it to the substrate.

Pigment. If the pigment fails, the finish will fade. Basically, fading is caused when substances in the environment attack the pigment portion of the paint and cause the color to change. Typically, color fade is a lightening of color, but some pigments may actually darken over time.



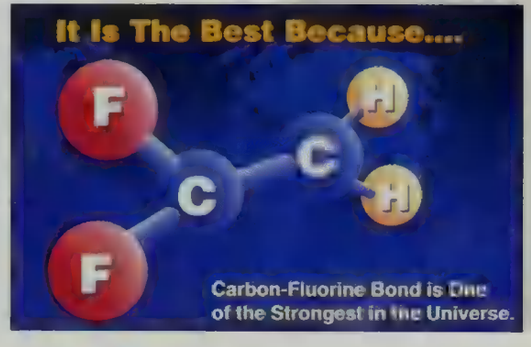
Complex metal oxide pigments — or ceramic pigments — have been used for hundreds of years to color porcelain and ceramic products. Basically, minerals are mixed together, baked at a very high temperature, then ground down to form a pigment. Ceramic pigments are unaffected by the presence of most oxidizing and reducing agents and are resistant to attacks from acids and alkalis. This translates into colorfastness — colors resistant to change even when exposed to hostile environments for extended periods. Experts consider the resistance to color change unparalleled.

THE MOST DIFFICULT QUESTION IS HOW TO JUDGE THE DIFFERENCES IN COATINGS AND THEIR EFFECTIVENESS ON ALUMINUM CLAD WINDOW SYSTEMS.

Resin. If the resin fails, the finish will chalk. Contributing to the breakdown of the resin are acid rain and pollution, salt spray and abrasion by airborne particles. Basically, when the resin particles at the surface lose adhesion, the surface takes on a white appearance, which is called chalk. This chalk, however, is difficult to wash or buff away. In addition, as the resin at the surface of the finish degrades and loosens up, the pigment particles that are imbedded in the resin detach and become debris on the surface — and contribute to an even more noticeable degree of paint failure.

For residential and light commercial windows and doors, commonly used paint resins are acrylics, polyesters, urethanes, TGIC powders, and siliconized polyesters. A radically different type of resin material is fluoropolymer (polyvinylidene fluoride). A distant cousin of Teflon®, fluoropolymer has an exceedingly strong molecular bond, which translates into its being a highly impermeable coating system. Fluoropolymer is considered a "Space Age" finish, for its use on building materials was preceded by use of similar materials in the space industry.

Fluoropolymer resin. Two different classes of fluoropolymer coatings are available in the U.S. market — PVDF (fluoropolymer) resin coatings using 70 percent fluoropolymer resin (by weight) in the coating system, and paints using 50 percent fluoropolymer resin in the total system. Marvin uses fluoropolymer resin brand named Kynar® and Hylar™. The additional resin in both is acrylic. Finishes

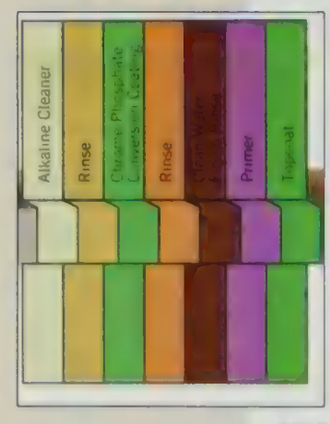


with 70 percent PVDF have long been used by the industry to coat aluminum curtain walls for skyscrapers, because of the high resistance to color fading and chalking. Yet, 70 percent fluoropolymer lacks maximum abrasion resistance, which is not a significant concern with skyscrapers that are not commonly prone to scratches or hard abrasive hits. A high degree of scratch and abrasion resistance is crucial, however, for residential and light commercial buildings, the surfaces of which are physically impacted more often. Therefore, the 50 percent fluoropolymer resin was developed. It retains high resistance to chalking and fading, but is more resilient to scratching. Marvin uses Kynar®, a 50 percent fluoropolymer resin system as a standard coating on all its products.

NO MANDATORY STANDARDS FOR PERFORMANCE EXIST FOR ANY PRODUCTS IN THE BUILDING INDUSTRY. HOWEVER, MANY VOLUNTARY STANDARDS HAVE BEEN ESTABLISHED.

Coating Application

The process by which the coating is applied is extremely important in the overall success of its endurance qualities in that proper coating techniques increase the corrosion resistance, film adhesion, and surface durability of the soon-to-be-added film.



Pretreatment. Marvin subjects all window and door extrusions to five stages of pretreatment:

- Stage one: Clean and desmut. A high pressure, high temperature alkaline solution cleans, etches and desmuts the aluminum.
- Stage two: Rinse. Clean rinse water is circulated at 300 gallons per minute over aluminum parts.
- Stage three: Conversion coating. The aluminum surface is converted to an adherent, amorphous, iridescent, mixed metallic oxide coating. To this an amorphous chromium phosphate coat is applied to increase the corrosion resistance, adherence, and durability of any applied film.
- Stage four: Rinse. As in stage two, clean rinse water is circulated at 300 gallons per minute over the aluminum parts.
- Stage five: Final rinse of neutralizing clean water consisting of 200 gallons per minute circulating water.

After pretreatment, the aluminum is racked and all water is blown off the aluminum parts. Then, the primer and top coats are applied as the aluminum window extrusion is passed through four enclosed areas. Booths are paired so that both sides of the extrusion can receive the necessary layer of paint without the product ever being touched. The process is entirely computer controlled.

Marvin extruded clad windows and doors receive a two-coat finish. For two-coat applications involving a primer, the top coat should be 1.0 mil minimum with a primer of 0.3 +/- 0.1 mil. (A mil equals one-thousandth inch.) A clear topcoat is required on paints that may react with the environment and discolor — those with metallic flake or unstable organic pigments such as bright colors.

Application. The finish is applied as follows:

- Step one: Application of primer coat using a high voltage charge applied at atomization to coat materials. This charge allows a highly efficient, uniform



application of coating material to the front, edges, sides, and back of the product allowing for application to a variety of surface configurations.

- Step two: Flash area, where the newly applied primer is allowed to flash off — the solvent evaporates before the next coating is applied.
- Step three: Application of color coat, applied with a bell-shaped atomizer that rotates at 10,000 to 60,000 rpms. Centrifugal force spreads the coating to the edge of the bell and spins it off in finely atomized, electrostatically charged particles.
- Step four: Flash area, where the newly applied coating is allowed to flash off — the solvent evaporates before baking.
- Step five: Baking at 450 degrees Fahrenheit for at least five minutes.

Meeting Industry Performance Standards

No mandatory standards for performance exist for any products in the building industry. However, many voluntary standards have been established. For finishes on extruded aluminum clad products the most widely referenced standards were developed by the American Architectural Manufacturers Association:

- AAMA 603.8-92. Voluntary Performance Requirements and Test Procedures for Pigmented Organic Coatings on Extruded Aluminum.
- AAMA 605.2-92. Voluntary Specification for High Performance Organic Coatings on Architectural Aluminum Extrusions and Panels.

A trade association of firms engaged in the manufacture and sale of architectural building components and related products, AAMA sets voluntary standards for components of windows, doors, skylights, curtain walls, and storefronts and entrances. To meet these standards, products must comply with stringent specifications and be subjected to a battery of performance tests that address a product's durability, strength, resistance to environmental degradation, and longevity. For the consumer, these can be used as litmus tests for product comparisons.

AAMA 605.2 is the more stringent of the two coating standards. What are the main differences between the two? Basically, a product that meets AAMA 605.2 versus 603.8 should show higher performance as concerns weatherability and durability. In other words, a product covered with a coating meeting the AAMA 605.2 standard should retain its original color, be more scratch resistant, and less vulnerable to other environmental pollution. There

should also be less likelihood of film loss, chipping or cracking.

A brief comparison of AAMA 605.2 and AAMA 603.8 follows as concerns specific test results.

Coating Thickness. Differences in coating thickness can affect appearance and are particularly helpful in maintenance of a consistent film coverage. For example, a thicker coat protects the adhesion of the film over sharp corners and recesses.

For both standards, coatings must be "visibly free from flow lines, streaks, blisters, or other surface imperfections in the dry-film state on exposed surfaces when observed at a distance of 10 feet from the metal surface and inspected at an angle of 90 degrees to the surface." Total dry-film thickness, however, differs. AAMA 605.2 calls for a minimum of 1.2 mil on 80 percent of significant exposed surfaces. No single measurement can be below 1.0 mil or 85 percent of thickness specified. AAMA 603.8 calls for 0.8 mil thickness on 80 percent of exposed surfaces. Measurements cannot be below .68 mil.

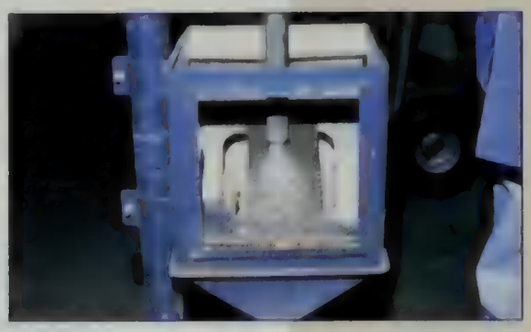
Dry Film Hardness. Dry film hardness can actually be a misleading term. For instance, think of glass. Glass is a hard surface, but it shatters easily. Rubber is a softer material, but is more impact resistance. For paint finishes, the ideal is a product that is scratch resistant but also allows for some formability without cracking.

Under both AAMA standards, dry film hardness is tested with an Eagle Turquoise Pencil, by pressing the exposed lead at 45 degrees to the film surface and pushing forward about 1/4-inch using as much downward pressure as can be applied without breaking the lead. To meet the particular specifications of 70 percent fluoropolymer resins, the grade F minimum hardness of AAMA 605.2 is actually less rigorous than the pencil test of H for AAMA 603.8. To meet either standard, there should be no rupture of the film to the substrate.

Through years of testing and development, Marvin found that a coating of 50 percent fluoropolymer resin meets similar high performance color fade and chalk resistance characteristics of the 70 percent solution, but provides an enhanced durability against scratching. In the dry film hardness test, Marvin's system measures a minimum of 2H, a hardness that provides better protection than either of the specifications against finish damage during fabrication, transportation, erection, and general daily use.

Film Adhesion. A consistent adhesion of the film to the surface avoids paint chipping and cracks in the paint. Under both standards the coating is subjected to rigorous dry and wet adhesion testing. The dry adhesion test involves cross hatching the film and then covering that cross-hatch with tape. For the wet adhesion test, the sample is immersed in distilled or deionized water. In both cases, when the tape is removed, no film should pull off and there should be no blistering anywhere on the sample. AAMA 605.2 requires an additional adhesion test in which the sample is immersed in boiling distilled or deionized water (210 to 212 degrees Fahrenheit) for 20 minutes, a faster test for film adhesion.





DIFFERENCES IN COATING THICKNESS CAN AFFECT APPEARANCE AND ARE PARTICULARLY HELPFUL IN MAINTENANCE OF CONSISTENT FILM COVERAGE.

Abrasion resistance. This is a highly specialized test to study the effect of sand constantly hitting the window or door surface. Testing for abrasion resistance is only required under AAMA 605.2 — the falling sand test method, during which the window and door systems are subjected to a showering of sand for a constant period of time, involves an calculating an abrasion coefficient according to the formula:

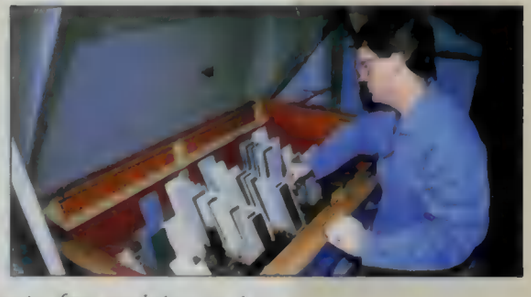
> ABRASION COEFFICIENT 0 LITERS PER MIL =V/T, where v equals the volume of sand used in liters and t equals the coating in mils (0.001-inch).

Under this test, the abrasion coefficient value of the coating shall be 40 minimum.

Nitric Acid Resistance. This test was added to AAMA 605.2 to analyze the effects of acid rain on window and door products; in other words to address environmental pollution. The test for nitric acid resistance allows not more than 5 Δ E Units (Hunter) of color changes on panels treated with nitric acid. The test procedure calls for placing a sample over the mouth of an eight-ounce bottle half filled with nitric acid for 30 minutes. After the sample is rinsed with tap water and dried, there could be no color change after a one-hour recovery period.



Corrosion Resistance. Resistance to humidity is desired in all climates, but particularly in coastal areas. AAMA 605.2 calls for exposing a sample in a controlled heat-and-humidity cabinet for 3,000 hours at 100 degrees Fahrenheit and 95 to 98 percent relative humidity, compared to 1,500 hours under AAMA 603.8.



Weathering. Weathering tests for resistance to UV light but also for other atmospheric attacks, such as salt. The weathering test is the heart of the AAMA 605.2 document, as test requirements for weathering were extended under AAMA 605.2 to five years compared to one year under AAMA 603.8. All weathering tests are to take place in a Florida exposure South of latitude 27 degrees North at a 45 degree angle facing South, one of the two areas in the U.S. considered the most extreme for such testing, the other being Arizona. AAMA 605.2 requires more stringent and specific paint performance for color retention, chalk resistance, gloss



PREPARATION AND PRETREATMENT OF ALUMINUM IS PARAMOUNT TO THE CREATION OF QUALITY ALUMINUM CLAD WINDOW AND DOOR SYSTEMS.

retention, and resistance to erosion.

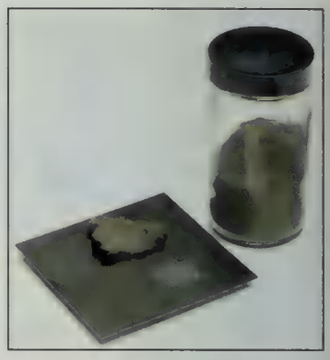
Preparation and Pretreatment. AAMA 605.2 prescribes strict procedures for the preparation and pretreatment of the material to be coated. AAMA 603.8 has no such prescription. Marvin believes that the preparation and pretreatment of the aluminum is paramount to the creation of quality aluminum clad window and door systems and follows elaborate procedures.

Color Uniformity. A test designed to make sure color is uniform throughout a product. Random samples are viewed under a uniform light source, such as a MacBeth daylight lamp or the North daylight sky.

Specular Gloss. Gloss or sheen of finish is tested for aesthetic purposes. Loss of gloss is a failure of the paint system. Samples must meet standard gloss values:

Gloss colors	Specular Gloss Value
High	80-Over
Medium	20-79
Low	19 or less.

Impact Resistance. This tests the adhesion of film to the substrate after impact. For the exercise, an 5/8-inch diameter round-nosed impact tester is applied directly to the coated surface in sufficient force to deform the sample a minimum of 0.10 inch. Tape is applied, and as with film adhesion tests, when pulled off there should be no loss of film.



Chemical Resistance. Muriatic acid and mortar used in construction and detergents used in cleaning have harmful ingredients that are likely to come in contact with the coating on extruded clad windows and doors. Tests should result in no visible change in film color or no loss of film adhesion. For muriatic acid resistance, a 10 percent solution of the acid in water is applied to the panel for 15 minutes. For mortar, a soft paste of mortar hardened on the surface for 24 hours should be easily dislodged with a damp cloth. A 3 percent solution of detergent and distilled water is applied for 72 hours.

AAMA has recently adopted four new paint specifications: AAMA 613 and AAMA 615 for paint on vinyl or plastic windows and AAMA 620 and AAMA 621, standards for high performance coil clad window systems.

AIA/Architectural Record Continuing Education

Continuing Education

The preceding section *High Performance From Start to Finish: An Evaluation of Clad Finishes on Windows and Doors*, sponsored by Marvin Windows & Doors, is part of the AIA/ARCHITECTURAL RECORD Continuing Education Series. You can receive continuing-education credits by reading the section, studying the learning objectives and answering the questions below. Check your answers against those provided on the next page and return the self-report form as indicated.

Learning Objectives

After reading *High Performance From Start to Finish: An Evaluation of Clad Finishes on Windows and Doors* and completing the exercise, you will be able to:

- Cite three factors to consider when evaluating the coating systems of extruded aluminum clad windows and doors.
- Compare two major standards for sprayed finishes on extruded aluminum clad windows and doors.
- Explain at least three performance enhancing processes or tests and their application to this specific product.

QUESTIONS

1. What factors should one consider when evaluating different coatings and their effectiveness for aluminum clad window and door products?
Answer 1.

2. Why is AAMA 605.2-92 considered a higher performance standard for sprayed paint finishes on extruded clad systems than AAMA 603.8-92?
Answer 2.

3. How does the use of ceramic pigment affect color consistency?
Answer 3.

4. What situations are best suited for coatings of 50 percent fluoropolymer resin versus 70 percent fluoropolymer resin?
Answer 4.

5. How does the intricate pretreatment process dictated by the AAMA 605.2 standard affect the overall performance?
Answer 5.

6. Describe the three-part test criterion for chemical resistance to ensure color consistency and performance against environmental factors such as acid rain.
Answer 6.

For answers turn to page 151.
For self-report form, turn to page 230.

AIA/Architectural Record Continuing Education

Questions on page 150

ANSWERS

1. Consider the aluminum substrate that the exterior sash, frame and muntins are made of and look for resistance to abrasion and impact. Examine the quality of coating applied to the substrate and determine which extruded aluminum coating standard the product meets. Finally, look at the process by which the coating is applied.

2. Basically, a product that meets AAMA 605.2 versus AAMA 603.8 should show higher performance as concerns weatherability and durability. In other words, a product covered with a coating meeting the AAMA 605.2 standard should better retain its original color, be more scratch resistant, and less vulnerable to other environmental pollution. There should also be less likelihood of film loss, chipping or cracking.

3. Complex metal oxide pigments — or ceramic pigments — are unaffected by the presence of most oxidizing and reducing agents and are resistant to attacks from acids and alkalis.

4. Generally, a 50 percent fluoropolymer resin coating is used on windows and doors for residential and light commercial buildings; a 70 percent fluoropolymer resin coating for high-rise buildings. Coatings with a 50 percent fluoropolymer resin content are more scratch resistance than those with a 70 percent fluoropolymer resin content and, therefore, offer better finish protection during fabrication, transportation, erection, and general use, while retaining strong color consistency.

5. This process increases corrosion resistance, film adhesion, and surface durability of the soon-to-be-applied film.

6. The measure for chemical resistance test looks for 1) resistance to visual change after applying a 10 percent muriatic/water solution to a sample; 2) mortar paste set for 24 hours should be easily dislodged with a damp cloth; 3) there should be no loss of film adhesion to the metal after a three percent solution of detergent and distilled water is applied.

For self-report form, turn to page 230.



MARVIN'S EXTRUDED CLAD WINDOWS AND DOORS
High Performance and a Wide Choice of Colors

Marvin offers a wide choice of colors for its extruded clad windows and doors. It's five standard extruded aluminum finish colors include white, bahama brown, pebble gray, medium bronze, and evergreen. For larger projects, several select colors are available — spruce, stone, ebony, french vanilla, desert beige, cape cod blue, and wineberry. In addition, Marvin offers custom color matching.

To see Marvin's product line, we invite you to visit our website at: www.Marvin.com.
Or, for more information please call 1-800-346-5128.

MARVIN WINDOWS & DOORS

Please circle #58 on inquiry card

Provided by Marvin Windows & Doors

DESIGNING AND ENGINEERING THE FUTURE

Market studies show that the use of engineered wood products in all forms of residential and nonresidential construction will double by the year 2000. The definition includes those products manufactured by bonding together wood strands, veneers, lumber or other wood fibers to produce a larger composite structural unit. They are "engineered" to form a stronger, more efficient building material by using less wood fiber to make more wood products.

In addition to being engineered with respect to their manufacturing processes, structural engineered wood products are also "engineered" by virtue of assigning design properties for use in construction applications.

Plywood, oriented strand board (OSB), glulam and wood I-joists, for example, are considered structural wood products, those used in construction applications governed by building codes.

APA-The Engineered Wood Association, divides structural glued engineered wood products into four general categories: (1) structural wood panels, including plywood, oriented strand board (OSB) and composite panels; (2) glued laminated timber (glulam); (3) structural composite lumber (SCL) consisting primarily of laminated veneer lumber (LVL) and parallel strand lumber (PSL) and (4) pre-fabricated wood I-joists.

How to specify structural wood panels

Structural wood panels are the most widely used of the structural glued engineered wood products. They are also arguably the most versatile, being used in scores of construction and industrial applications. The original structural wood panel, plywood, consists of veneers arranged in perpendicular layers. The layers may consist of a single veneer ply or two or more plies laminated with the grain running in the same direction. There is always an odd number of layers, with the grain of the face layers typically oriented parallel to the long dimension of the panel. It is the cross-laminated layup of layers of veneer that gives plywood its excellent strength, stiffness and dimensional stability. In addition to a variety of sheathing, siding, sanded and concrete form grades, many manufacturers can produce custom layups for specialized applications.

Oriented strand board (OSB) consists of wood strands or 'wafers' with adhesive to form a mat.



Engineered wood may be the future of the residential and nonresidential construction industry. It's manufactured from younger, faster growing trees, and gives an end product that's stronger and stiffer than traditional lumber. Engineered products shown left to right: APA T1-11 siding, oriented strand board, glulam, I-joist, plywood.

Like the veneer in plywood, these mats are layered and oriented for maximum strength, stiffness and stability. The individual strands are typically three to four inches long. OSB is widely used as construction sheathing, web material for wood I-joists, structural membranes of structural insulated panels (SIPs) and in a growing number of other applications.

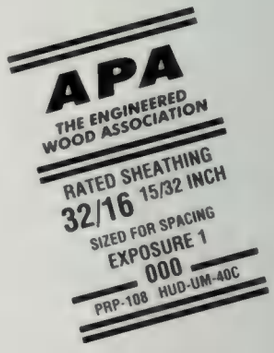
Structural composite panels (the APA tradename is COM-PLY) consist of veneer faces bonded to a wood-base core material, such as OSB. COM-PLY panels are manufactured in three- or five-layer arrangements. A three-layer panel has a veneer face and back, while a five-layer panel also has a veneer crossband in the center. Typical composite panel applications include sheathing, siding and industrial applications.

In order to properly specify a structural panel product, the architect must be familiar with the standards under which these products are manufactured and the associated trademarks which identify these products.

Plywood can be produced in accordance with U.S. Product Standard PS1-83 for Construction & Industrial Plywood or under the provisions of Voluntary Product Standard PS2-93, Performance Based Standard for Wood-Based Structural-Use Panels. In addition to plywood, OSB and composite panels can also be produced for use as construction sheathing and single-floor applications under PS2-93. APA also publishes PRP-108, Performance Standards and Policies for Structural-Use Panels, which defines the performance requirements for sheathing products, STURD-I-FLOOR and sidings, regardless of whether the panel is manufactured using all veneers, composites or non-veneer materials.

Each of these standards requires the panel products to meet a wide variety of physical and mechanical tests in order to assure compliance. A proper construction specification should reference one of these standards.

Design values published by APA are based on extensive testing of APA trademarked panels and are only applicable to panels bearing the APA trademark. Thus, it is important that the design architect specify APA trademarked panels as this mark provides them with the assurance that the product conforms to the standard specified.



In addition to specifying the APA trademark, an architectural specification for a construction application should contain the following minimum information: panel thickness; panel grade; span rating and exposure durability classification.

Panel grade refers to the grade name of the panel. Grades are generally identified in terms of veneer grade used on the face and back (A-B, B-C, etc.) or by a name suggesting the panel's intended end use as APA Rated Sheathing.

Span rating denotes the maximum recommended center-to-center spacing, in inches, of supports over which the panel should be placed in construction applications. For example, a

You can get two AIA continuing education learning credits by reading this APA article. Examine the learning objectives and complete the questions on page 158. Then just fill out and return the self report form on page 230.

span rating of 32/16 indicates the panel can be used in a roof sheathing application with the joists spaced up to 32 inches on center or in floor framing with the joists spaced 16 inches on center.

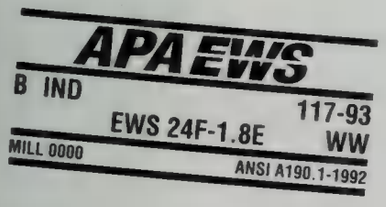
Exposure durability classification relates to glue bond durability. APA trademarked panels may be produced in four exposure durability classifications– Exterior, Exposure 1, Exposure 2 and Interior with most construction grade panels being produced as an Exposure 1 classification.

Glued laminated timber (GLULAM) explained

Glued laminated timber, or glulam, is an engineered stress-rated product created by bonding together individual pieces of lumber having a thickness of two inches (50 mm) or less. Individual pieces of lumber are end-joined together to create long lengths, referred to as laminations, which are then face-bonded together to create the finished glulam timber.

Glulam is also a highly versatile engineered wood product. It can be shaped into forms ranging from straight beams to complex curved members and is used in a wide variety of residential and nonresidential building construction applications.

Glulam is manufactured in accordance with the provisions of ANSI Standard A190.1-93, Structural Glued Laminated Timber which is referenced by virtually every building code in the U.S. APA's related corporation, Engineered Wood Systems (EWS) is a third party quality control agency that provides trademarking for glulam. Approximately 65% of all glulam manufactured in North America by EWS member plants in the United States, Canada and Mexico bears the APA EWS trademark. It is important that all architectural specifications require that glulam be manufactured in accordance with ANSI A190.1.



Since glulam is manufactured from kiln-dried lumber, shrinkage and warping are minimized and dimensional stability is assured. In addition, the use of dry lumber permits higher design strengths to be achieved than would be possible from green timbers. Because they are dry, glulam also has excellent fastener-holding capability. In floor beam applications, this translates into a firm subfloor with minimal nail popping or squeaks.



APA trademarked engineered wood products are used in residential construction on floors, walls and roofs.

Specify the right product for the right application

To specify the right member for the right application requires a basic understanding of the inherent characteristics of glulam. Some of the design considerations unique to this product include selecting the appropriate structural grade, specifying member size and appearance characteristics, and determining the appropriate camber.

Glulam is available in a variety of sizes, species and appearances - each of which has a unique look and application. The most commonly used species for glulam are Douglas Fir, Southern Pine and Spruce-Pine Fir. Glulam design values are also published for Hem-Fir, Alaska Cedar and other softwood and hardwood species.

When used in applications which expose glulam to the elements, it is important that the architectural specifications require them to be pressure impregnated with preservative treatment chemicals in accordance with applicable industry standards. Detailed information on pressure treatment of glulam is available from EWS.

ASTM Standard D-3737-93, Test Method for Establishing Stresses for Structural Glued Laminated Timber, sets forth the methodology for assigning stresses to glulam. Design stresses are published in such references as the National Design Specification for Wood Construction (NDS), the Uniform Building Code and Engineered Wood Systems National Evaluation Report No. 486 (NER 486).

Each of these documents tabulates various lay-up combination symbols and associated design stresses. A typical specification might make reference to a specific lay-up combination such as a Western species 24F-V4 combination which denotes a bending member produced using visually graded lumber with an allowable bending stress of 2400 psi. As an alternative to specifying a specific lay-up combination, the specifier may indicate the allowable design properties required in the specification documents and rely on the supplier to provide a glulam which will satisfy these design criteria.

For members such as columns or trusses which are subjected primarily to axial loads, glulam members having all the same grade of laminations throughout the depth are most efficient. All one grade lay-ups are typically specified by a number designation such as a No.1, No.2, etc. These designations are also tabulated in NER-486 and the NDS.

Glulam beams are available in both custom and stock sizes. Stock beams are manufactured in commonly used dimensions and inventoried at distribution centers throughout North America in long lengths. These members can



APA EWS trademarked glulam is an engineered stress-rated product used in a wide variety of residential and nonresidential and building applications. Shown is a commercial header.

then be cut to length when the beam is ordered by the contractor. Stock beams meet the requirements for many typical residential and light industrial construction applications where a simple span bending member is required for headers, floor beams and roof beams.

Stock beam widths that are typically inventoried are 3-1/8" and 5-1/8". In addition, many stocking dealers also inventory "full width" 3-1/2" and 5-1/2" members.

Custom beams are commonly ordered for a specific building application. For glulam manufactured using Western species of lumber these members are readily available in widths of 3-1/8", 5-1/8", 6-3/4" or 8-3/4". For glulam manufactured from Southern Pine Lumber, the traditional widths are 3", 5", 6-3/4" or 8-1/2". Wider widths or other custom widths are also available for any species but availability needs to be verified before specifying.

Glulam beams produced using Western species lumber are manufactured in depth multiples of 1-1/2" whereas Southern Pine glulam is typically supplied in depth intervals of 1-3/8". Regardless of the species or end use requirements, custom beams are available in virtually any size or configuration that may be required to meet design conditions.

Premium, Architectural, Industrial and Framing describe the four appearance classifications traditionally specified for glulam. Premium or Architectural beams are recommended when the glulam will be exposed and finished appearance is of prime importance.

Industrial appearance members are typically surfaced on the two wide faces with eased edges on the soffit face but with little or no additional filling or patching of voids. These are typically specified for light commercial and industrial construction where appearance is not of primary importance or for concealed applications such as a residential header.

The Framing appearance is intended only for concealed applications such as when glulam members are being framed into traditional 2x4 and 2x6 wall construction and a full width (3-1/2" or 5-1/2") member is desirable. Full-width refers to the fact that these members are only surfaced to a "hit and miss" designation to produce the final required net width.

It is important to note that the finishing of a glulam member has no influence on the members structural capacity. In other words, an industrial or premium appearance beam manufactured to meet the same structural grade will have identical structural performance characteristics. This is often misunderstood by specifiers and a Premium appearance may be specified assuming it will provide a higher degree of structural performance than a member with an Industrial appearance.

The grade and placement of individual laminations affects the overall strength of the beam and determines whether the beam is "balanced" or "unbalanced". In order to more efficiently use the available lumber resource, laminations of highest strength are placed in the zones of the member that will be subjected to the highest stresses in service. Balanced timbers are symmetrical in lumber quality and are used in applications such as cantilevers or continuous spans where either the top or bottom of the beam may be stressed in tension.

In unbalanced beams, the quality of lumber used on the tension side of the beam is higher than the lumber used on the corresponding compression side. This limits their use to simple span applications or short cantilever applications where high tension stresses will not be developed on the top of the beam.

A unique quality of glulam is the ability to precamber the members to offset in-service deflections. Camber can be specified in "inches of camber" such as 3/4" or as a camber "radius" such as 2000 ft. The question of how much camber is needed is often asked when architects specify glulam beams. For most short span framing applications, such as headers and floor beams in residential framing, stock beams are supplied with a camber radius of 3500 ft. or flatter with zero camber being an acceptable option.

For longer span roof beam applications, the glulam industry recommends beams be cambered for 1-1/2 times the calculated dead load deflection. For floor beams or shorter spans, the recommended camber is 1.0 times the calculated dead load deflection.

Structural composite lumber examined

Laminated veneer lumber (LVL) is the most widely used of the structural composite lumber products. It is produced by bonding thin wood veneers together in a large billet so that the grain of all veneers is parallel to the long direction. The LVL billet is then sawn to desired dimensions depending on the construction application. Some of the product's many uses are as headers and beams, hip and valley

afters, scaffold planking, and as the flange material for prefabricated wood I-joists.

Parallel strand lumber (PSL) is created by adhesively bonding together relatively long strands of wood fiber. The strands are oriented in a parallel configuration with the long axis of the member. PSL members having cross sections up to 11 inches by 19 inches can be produced, although the most common sizes are those comparable to dimension lumber. PSL members are typically used as beams, headers and columns.

Since all SCL products are produced as proprietary wood products, each manufacturer must obtain their own code acceptance. This is typically accomplished by obtaining a National Evaluation Service Report (NER) for the product. These NER reports establish the various strength properties for the SCL product, the conditions of use for these products and define the quality assurance testing program that is required to assure that these stress levels are maintained. Since there are no standard design values or conditions of use for these products, the architect must be familiar with these various NER reports or rely on proprietary product literature to specify them.

A single standard for prefabricated wood I-Joists

Prefabricated wood I-joists, also referred to as I-beams, are structural, load-carrying products and are among the fastest growing of the glued engineered wood products. Their "I" configuration provides high bending strength and stiffness characteristics with a very low weight. I-joists are typically available in long lengths and because they are very lightweight can be easily handled at the jobsite without the need for heavy handling equipment. The flange material for I-joists is either dimension lumber or LVL whereas the web material is either OSB or plywood.

I-joists are used in both residential and nonresidential floor and roof construction in much the same manner as sawn lumber joists with the largest use being in residential floor construction. In general, nominal 10" and 12"



APA EWS trademarked engineered wood I-joists allow you to use longer spans and wider spacings than standard lumber joists

depth I-joists can be substituted on an equal or greater load/span basis for most grades and species of 2x10 and 2x12 sawn lumber. Since I-joists can be supplied in long lengths, they are often used in multiple span applications and therefore interior bearing reactions become a design control that is normally not applicable to sawn lumber. Also, special design verifications need to be made for I-joists supporting concentrated loads or cantilevered over supports.

As with SCL products, wood I-joist products are produced as proprietary products with each individual manufacturer obtaining their own NER reports for building code acceptances. Thus, as with SCL, the specifier must be familiar with either the NER report or the manufacturers literature for each of these proprietary products in order to develop appropriate construction specifications. In an effort to simplify I-joists, APA has developed a performance standard for I-joists when used in residential floor applications. It is anticipated that this standard will be accepted by the model building codes in early 1997.

Why specify the APA trademark

Glued engineered wood products represent an exciting future for the wood products industry. These products allow high end structural products to be produced in a manner that makes efficient use of the available wood fiber. Standards have been developed which establish the test protocol for determining design properties for the various glued engineered wood products described in this article. Such standards, when properly referenced in project specifications, help assure the end user of a structural product which will perform its end use function.

In order to properly specify these products in the wide range of construction applications for which wood framing is applicable, it is imperative that architects responsible for product specifications have a thorough understanding of the design properties and end use characteristics of these products.

APA-AIA Interactive Correspondence Course. 10 credits

Working in conjunction with the American Institute of Architects, APA has developed an interactive multi-media CD-ROM correspondence course to educate AIA members and other design professionals on the proper use and specification of engineered wood products in commercial and residential projects. The course is accredited with the AIA Continuing Education System (AIA/CES). It provides up-to-date information on understanding engineered wood, specifying the right product for the right application and using these products in high wind and seismic regions. AIA members will receive 10 CES learning units for successfully completing the self study exam.

In addition to the five, one-hour modules, the CD-ROM contains an interactive glossary of engineered wood terminology and various industry world wide web site connections. The CD-ROM utilizes the latest technology including animation, video and audio, and a powerful search engine that takes you directly to the information you need. It allows fast, easy access to the product specifications and design tables that architects have used for years.

Please contact *APA - The Engineered Wood Association* at P.O. Box 11700, Tacoma, WA 98411-0700, or by calling (206) 565-6600. Internet address: http://www.apawood.org

CIRCLE 59 ON INQUIRY CARD

APA

The Engineered Wood Association

DESIGNING AND ENGINEERING THE FUTURE: AIA CONTINUING EDUCATION Q & A

LEARNING OBJECTIVES

After reading Designing and Engineering the Future and completing the exercises you will be able to:

- Identify the main characteristics and at least two design applications for at least three of the engineered wood products examined in the article.
- List at least 10 key elements to consider in engineered wood product specification.
- Cite at least two standards for engineered wood products.

QUESTIONS

1. Differentiate between oriented strand board (OSB), plywood, structural composite panels, glued laminated (glulam) timber and identify the most common applications for each.
2. List five important elements to include when specifying structural wood panel products.
3. What are some design considerations specific to glulam?
4. How much camber is commonly needed when specifying glulam beams for short and long span framing?
5. Since there are no standard design values or conditions of use for structural composite lumber products, where can architects find useful information beyond the proprietary product literature when researching and specifying?
6. Why are wood I-joists the fastest growing of the engineered wood products?

ANSWERS

1 a) OSB is made by bonding three or four inch long wood strands with adhesives in a layered mat and is most often used for sheathing, web material for wood I-joists and as the structural membrane for structural insulated panels.

b) Plywood consists of veneers arranged in perpendicular and odd-numbers of layers with the grain of the face layers typically oriented parallel to the long dimension of the panel. Plywood is most often used as sheathing products, STURD-I-FLOOR and sidings.

c) Structural composite panels consist of veneer faces bonded to a wood-base core material. APA's COM-PLY is manufactured in three- and five-layer arrangements. Prime applications include sheathing and siding.

d) Glulam is manufactured by endjoining together pieces of wood that are 50mm in thickness or less. These laminations are then face-bonded together. Since it can be shaped, uses range from residential to commercial headers, floor beams to roof beams, as well as columns and highly complex commercial applications.

2. An architectural specification should include: manufacturing standard to which the product conforms, panel thickness, panel grade, span rating and exposure durability.

3. Consider the appropriate structural grade, wood species, specifying member size and appearance, whether balanced or unbalanced layups are in use and determine the suitable camber.

4. For short spans, stock beams come with a camber radius of 3500 feet in flatter with zero camber acceptable. In most residential uses. The glulam industry recommends beams be cambered for 1.5-times the calculated dead load deflection for roof and 1.0 times the calculated dead load deflection for floor beams.

5. National Evaluation Service Reports establishing the product's strength properties are available from the building code jurisdiction.

6. These structural load carrying products provide high strength and stiffness with a very low weight that makes for ease in handling and use in long lengths for multiple span applications.

"I don't know who you are.

I don't know your company.

I don't know your company's product.

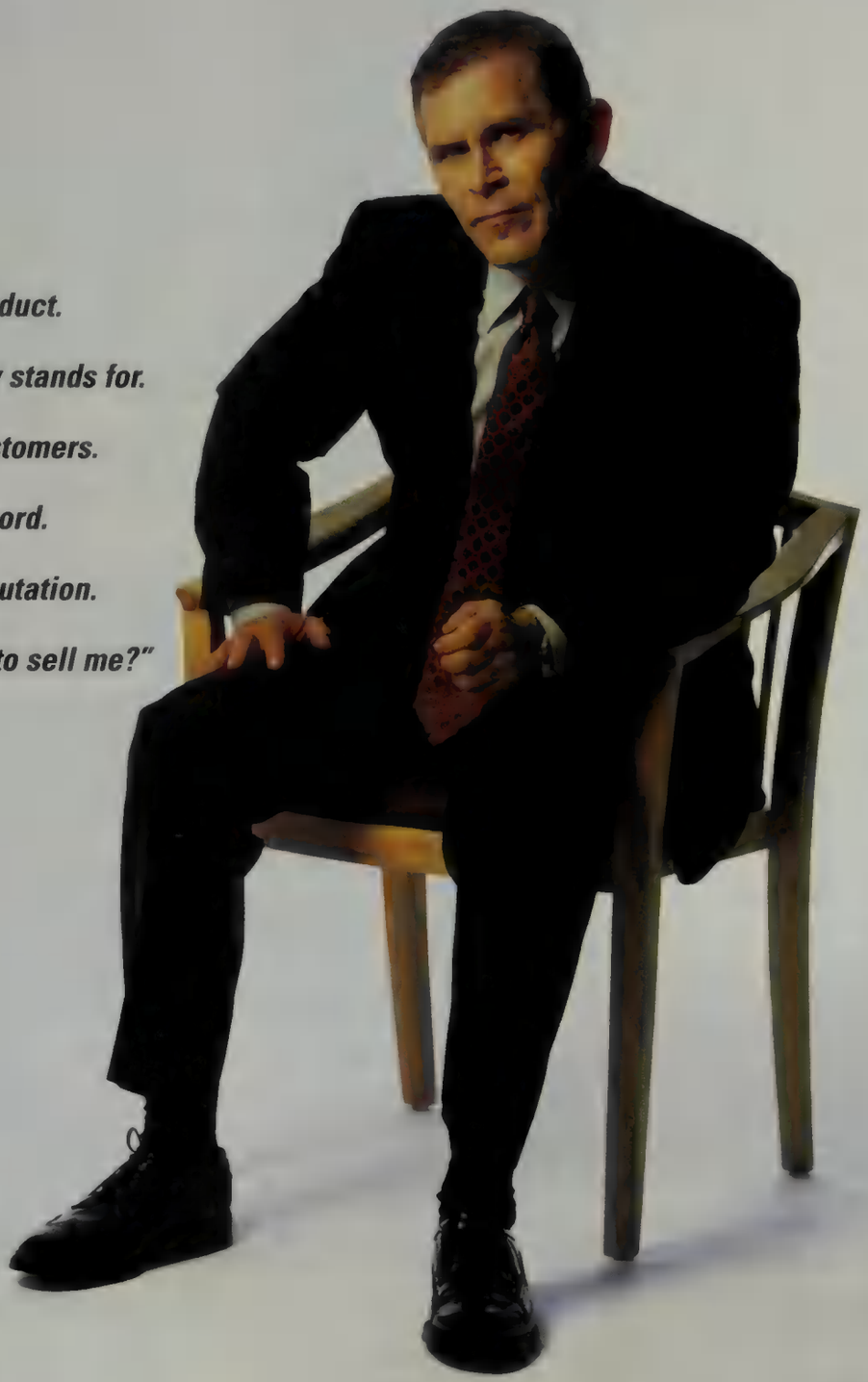
I don't know what your company stands for.

I don't know your company's customers.

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CIRCLE 61 ON INQUIRY CARD

Metal Roofing Fundamentals

DESIGNERS NEED TO GO BEYOND STANDARD DETAILS AND DATA, ESPECIALLY IN DESIGNING FOR WIND AND SNOW.

by Steve Hardy and Michael J. Crosbie

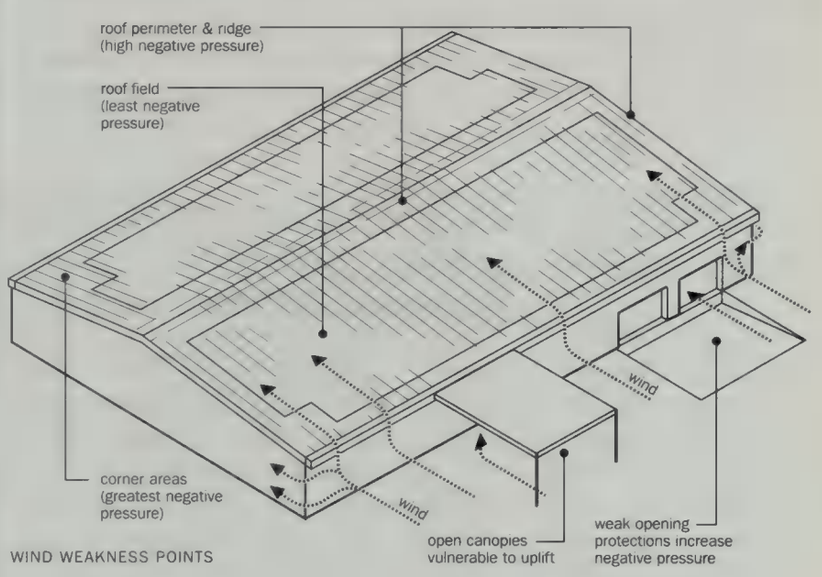
Metal roofs, a highly visible element of both low and high-end architecture for centuries, maintain a significant place in U.S. construction today due to esthetics, economy, and durability. Corrugated tin covers the most humble of agriculture sheds, while copper and lead have capped the most treasured cathedrals and institutions of Western culture.

While copper, lead-coated copper, stainless steel, terne-coated stainless, and galvanized aluminum all have their place in the market, the most popular type of metal roof today is factory-formed, paint-coated steel, and this story will focus primarily on this type. These first became popular for industrial and warehouse use, and metal-building manufacturers integrated support purlins and batt insulation into a total system. These metal-roof types have since migrated into wider commercial and institutional use.

Among the reasons for the new popularity of metal roofs is dissatisfaction with traditional membrane roofs. Built-up roofs and newer modified-bitumens or single-plies require significant maintenance and repair to achieve even a 15- to 25-year life. With proper design and installation, a metal roof system can—with reasonable maintenance—remain leak-free for 40 years or more.

Although the design and construction of coated-steel roof systems is apparently straightforward, few accepted standard details currently exist within the metal-roofing industry. Designers should start with reliable manufacturers' details and specifications, but this primer focuses on areas that are too specific for coverage by standard details and technical data. Architects also need to be aware of the changing consensus on wind uplift and snow loading.

Metal roof systems were traditionally divided into two broad categories. One type is known as *architectural,* and consists of metal roof panels supported by a deck. The other common type is referred to as *structural* because the panels support their own weight, and no underlying deck is needed. However, as hybrid systems have come to be more commonly used, a new distinction has developed: steep slope versus low slope. Usually supported by a deck, *steep-slope* roofs are defined as those with a minimum pitch of 3:12. The lapped, standing seams connecting the panels are designed to shed water, rather than create a watertight seal. These systems are sometimes referred to as hydrokinetic. With the wide use of metal roofs on large commercial and institutional projects, *low-slope* (minimum 1/4:12) types have developed. Because they are nearly flat and water can accumulate on these roofs, the seams and laps connecting low-slope metal roof panels must be designed to be watertight (hydrostatic) and to withstand water pressure.



Roof failures often occur when designers don't recognize the varying wind forces on a roof.

These types usually are not supported by a deck. While typical spans for structural panels are five feet on-center, the span is affected by the thickness of the metal and the configuration of the panel. The more ribs and seams, and the higher they are, the larger the possible span. However, some architects find the rib and seam pattern esthetically too pronounced, and should consider different kinds of panels or spans.

Wind uplift is the focus of new attention

Roof failures in recent hurricanes, especially Florida's Hurricane Andrew of 1992, have forced a reassessment of some roof-design criteria. High-

Continuing Education *This month's installment of the ARCHITECTURAL RECORD/AIA continuing-education series covers metal roofing. Use the learning objectives below to focus your study. After reading this article, complete the questions on page 228 and check your answers, page 230. AIA members may fill out the self-report form and send it in for two AIA learning units. —Mark Scher, Director, AIA Continuing Education Programs and Products.*

Learning Objectives *After reading this story and completing the exercises, you will be able to:*

1. *Identify at least three wind-load standards;*
2. *List two or more design solutions for problems related to condensation, thermal movement, and water leakage at flashings and penetrations;*
3. *Cite seven approaches for minimizing and controlling damage from heavy snow.*

Steve Hardy is a roofing consultant in Nederland, Texas. Michael J. Crosbie is a senior architect with Steven Winter Associates, a building systems research and consulting firm in Norwalk, Conn. Portions of this article are adapted from a forthcoming book on metal roofing, to be published by The McGraw-Hill Companies.

speed winds cause negative-pressure areas on roofs. What's called "blow-off" is really the roof being drawn off by negative pressure. The pressures vary at different parts of the roof and are affected by configuration and slope (drawing previous page). In recent hurricanes, many failures occurred at the corners and edges, where negative pressure is greatest, and much of the remaining roof covering was then sucked off. A great deal of damage was also done when wind entered buildings through blown-out windows and doors, creating positive pressure on the insides of roofs, which magnified the outside suction force.

Designing and specifying a metal-panel roof system to resist wind blow-off is comparable to wind-resistance design for other types of roof systems. Additional load factors should be considered for steeply sloped metal-roof systems because the shape affects how air flows over it.

A number of design standards have been upgraded in recent years to reflect a better understanding of wind uplift. If the building is insured by Factory Mutual Systems (FM), wind-resistance design must be in accordance with the recently released "Factory Mutual Approval Standard For Class 1 Panel Roofs, Class #4471," unless FM grants a variance. (Contact information is listed at the end of the story.) The standard recognizes that wind resistance must be designed into the entire roof and support system. FM's approved assemblies reference and include the structural purlins supporting the roof, the fasteners that attach the roof panel to the purlins, the insulation, and the roof covering itself. Simply indicating that the roof is to be attached "per FM requirements" is not enough. The architect must spell out requirements in drawings and specifications.

A similar specification some architects use is to require the metal roof system to be listed per wind classification UL-30, UL-60, or UL-90. These ratings are derived by Underwriters' Laboratory using their UL-580 test procedure. The test subjects samples to both positive pressure on the underside and negative pressure on the top side, thereby providing classification for nominal gross-uplift pressures levels of 30, 60 and 90 lb.

OF DRAG LOADS, ICE DAMS, AND OTHER SNOW-LOAD MALADIES

The damage done by heavy snows in much of the country last winter revealed weaknesses in the way many metal roofs are designed. Actual collapses from excess snow are relatively rare, but snow can considerably damage roofs. And falling snow masses can do injury.

In heavy snow regions, live loads from snow can exceed 200 psf, while in most northern areas of the U.S. snow loads are calculated at 35 to 50 psf. Snow falling from upper-level roofs onto lower ones can cause impact loads much higher than static ones. While a roof can be designed for these loads, it is better to avoid the condition. Also, deep overhangs and suitable roof slopes should divert falling snow and icicles so that they don't injure persons at entrances and on adjacent streets and walks.

Drag loads

On steep-slope roofs, the drag load is the tension the weight of the snow exerts on the roof panel: in effect the snow tries to pull the panel off as it slides down. The steeper the roof and the longer the panel length, the higher the drag load. For example, a 30-ft-long roof with a 4:12 slope will have a drag load of 120 pounds per lineal foot (plf) at the ridge. The same roof with a 12:12 slope will have a drag load of 1,770 plf. The drag load is resisted by the fasteners used to pin the panel to the roof deck and building structure. The designer will need to give drag-load guidance to the manufacturer, who should be able to demonstrate that fastener-load capacity and shear resistance of the panel thickness can resist the loads.

Roof configuration

Metal roofing panels are slick, and will shed snow readily, sometimes in huge, damaging masses. Staggered patterns of snow guards or tiny snow fences are sometimes used to retain snow until it can melt. There is controversy over how effective these devices are. Sometimes they hold too much snow on the roof,





causing overloading; other times the snow pulls them out, damaging the roof or causing leaks. And they don't guarantee that a dangerously large mass of snow won't fall off the roof. George Mueller, president of Specified Roofing, a roofing consultancy in Richton Park, Ill., says that one system he has looked at that features 3/8-in.-high embossments in the panel itself appears to offer a good performance compromise.

Where heavy snow is anticipated, valleys should be made from flat metal stock and widen as they go down the roof. They should be wide enough to eliminate ribs or standing seams where snow can accumulate. Sliding snow can bend rib seams, sometimes tearing apart the metal panels (photo left).

Vents and other penetrations

Wide, tapered saddle crickets should be used to divert sliding snow around chimneys and other large roof penetrations. A sliding snow and ice mass can displace or rip out a vent stack or chimney. Vents or stacks located at the ridge will be out of harm's way. They should should also extend high enough so they won't be covered by accumulated snow.

Ice damming

This is the most common roof problem in snowy climates. Snow melting next to the roof surface under a thick snow pack runs down to the cold eave, where it freezes. A dam of ice is created, behind which more water piles up and freezes. Water backs up into the roof covering behind the dam, causing leaks.

Heavy roof insulation may equalize the temperature between eave and attic, but experts are now urging the consideration of venting eaves to attics so that they are sufficiently warmed to limit freezing melt-water on the roof. Severe snow conditions may warrant exhausting some air from the interior to the attic and eve. Freezing can be slowed and a combination of soffit vents and ridge vents keeps condensation from forming. A water-barrier, rather than water-shedding roof system should be considered where ice damming is likely. If the sealants within the panel system fail to keep the backed-up water from penetrating., a waterproofing underlayment membrane at all eave, valley, and cricket locations offers an additional line of defense.

per square foot. The weakness of the UL procedure, however, is that the test specimen does not include edge and roof details, and these have proven to be vulnerable in severe wind storms.

The American Society of Civil Engineers ASCE 7-95, "Minimum Design Loads For Buildings And Other Structures," can help designers determine realistic wind-uplift pressures, so that proper attachments can be designed. ASCE 7-95 contains design uplift-pressure formulas for

HEAVY SNOW DAMAGE IN MUCH OF THE COUNTRY LAST WINTER REVEALED WEAKNESSES IN THE WAY MANY METAL ROOFS ARE DESIGNED.

cladding and components and takes into account differing conditions at corners, perimeter, and the field of the roof system.

Designers sometimes use values obtained from model building codes, such as the Standard Building Code, which applies in much of hurricane country. However, code requirements are minimums and have not always been adequate for the kinds of wind pressures buildings actually experience, especially high-rises. Some local jurisdictions, most notably Florida's Dade County, have stricter requirements.

A long awaited standard, relatively new to the metal-roofing design community, may find its way into the codes. It is ASTM E 1592-94: "Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure," and experts see it as more accurately reflecting real wind effects. The test evaluates the strength of the connection of the metal-roof system to the building structure. The designer specifies the force that the roof system must be capable of resisting—for example, 90 psf of negative pressure uplift in accordance with ASTM 1592-94.

Researchers investigating wind damage have found plenty of design errors, but they have concluded that most wind-related roof losses are a direct result of improper attachment of the roof system to the building structure. This is too often the result of poor site supervision of unskilled mechanics. While the architect may not control field quality, he or she can influence it in impressing upon the client the importance of using experienced and qualified subcontractors. The architect can also review quality standards in pre-construction conferences and carefully observe the work.

Flashings—the most vulnerable details

The design and application of flashings to a metal roof is less forgiving of error than roof types with more redundancy, like multi-layer built-up roofs. To keep the roofs watertight, metal roof flashings—ideally made from the same stock material as the roof panels themselves—rely on a single layer of tape sealant or caulk in water-barrier panel systems, or on the gravity flow of water in water-shedding applications.

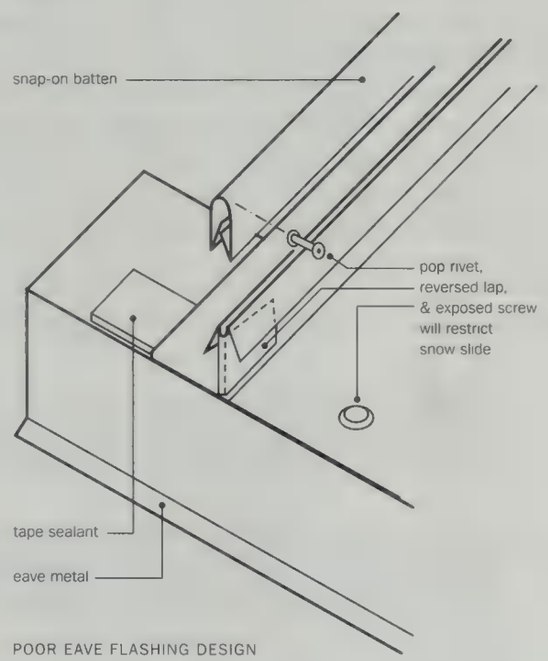
General waterproofing principles common to the roof industry apply to metal roof flashing systems. The sealing adhesive, or caulk, between the flashing and the metal-roof membrane must be continuous to create a waterproof seal. The architect, not the manufacturer, must size the flashing, assuring the coverage of base flashings under extreme thermal conditions and making sure flashings extend up walls, curbs, and parapets a height sufficient to keep wet snow and wind-driven rain from driving moisture into the building. If there are movement joints in the building, flashings must be able to accommodate the desired dimensional change. The SMACNA manual offers some guidance and is non-proprietary, but is mainly oriented to flashings for low-sloped membrane roofs and

Low-slope roofs need more than one line of defense to keep water out.

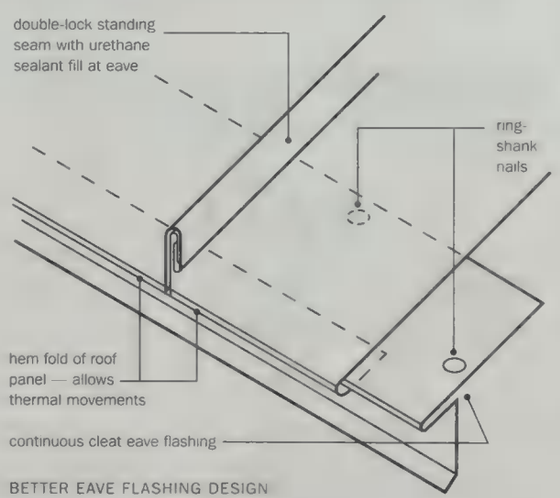
field-formed architectural standing-seam types rather than the factory-formed systems most commonly used.

Eave, rake, ridge, and gutter flashings are usually supplied by each metal-roof manufacturer as part of its system. However, manufacturers' standard flashing details may not take into account unique building configurations. For example, the designer will have to modify a rake flashing that the manufacturer shows as fixed to both the roof panel and to the building wall when some movement between the two elements must be accommodated.

A common source of failure is flashings that are lapped, butted, or wrapped in a way that depends primarily on sealant to keep water out. If movement between flashing sheets isn't needed, soldering the joint is best. However the shop or field painting done after soldering is never as durable as the baked-on coating applied to the sheet stock. When soldering is required, it is best to use a kind of metal that can be soldered but does not need painting, such as stainless or galvanized steel. To match the



POOR EAVE FLASHING DESIGN



BETTER EAVE FLASHING DESIGN

roof color, the soldered flashing can be covered with a piece of metal that matches the roof-field color. If this covering is riveted into place, though, the steel mandrels (the anchoring part of the rivet) may rust, causing unsightly streaks. Admittedly, this is an imperfect and more complex solution than manufacturers recommend, but the number of failures at poorly fabricated curbs and corners demands the designer's attention.

Details at roof penetrations

Manufacturers' standard details may also overlook the support of flashings at openings. Additional framing must be provided around the opening to be sure that both the roof field and the flashing are properly supported. Especially check framing shown in structural drawings to be sure that it is sized and located to accommodate needed flashing systems and the shims or blocking that supports them.

Ideally, architects should avoid penetrations through metal-panel roof systems. Instead, consider installing vents or fans through a building side wall or manifolding vent pipes together to minimize the number of roof penetrations.

Controlling condensation

Condensation occurs when the surface of a material reaches dew-point temperature. Because metal reacts quickly to changes in temperature, condensation on the underside of the panel requires more attention from the designer than is needed for other kinds of roofs. On cold winter days, for example, warm, moist air that escapes the interior of a building will condense on the cold underside of metal roof panels. Accumulated water can leak back into the interior. The condensate may also be trapped between the metal roof panel and the purlin supports or roof deck, causing the panel to rust through from the bottom (an occurrence not covered by manufacturers' warranties). Among the solutions:

Ventilation: The entire underside of roof panels must have a continuous flow of air, which can often be accomplished by proper ventilation of the attic or plenum space. The American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) *Handbook of Fundamentals* or the Federal Housing Administration (FHA) "Minimum Property Standards" are the documents referenced by building codes for ventilation and humidity control of an attic cavity. But research is ongoing, and the FHA standards appear to be out of date. In general, the recommended air-exchange rate for residential structures today is a minimum of three times per hour in the attic or plenum space, which can usually be provided through the use of continuous eave and ridge vents. In increasingly popular metal-roof retrofits over existing built-up roofs, adequate ventilation is all too often not provided in the space between the old and new roof. Many roofing experts strongly advocate a minimum of five air changes per hour to compensate for the exceptional humidity that can develop in these spaces.

TRAPPED CONDENSATION CAN CAUSE A ROOF PANEL TO RUST THROUGH FROM THE BOTTOM

Vapor retarders: In addition to adequate air-exchange rates, the ASHRAE Fundamentals handbook recommends the use of vapor retarders to keep moist air away from the underside of the roof. Structural-panel roof systems are often designed with a vapor-retarder sheet that supports batt insulation and stretches between purlins or



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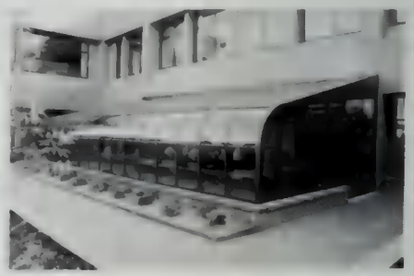
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rafters and is usually taped and sealed. This does not create a perfect barrier, but the amount of moist air that reaches the roof panel is usually acceptable. In some commercial and most industrial applications, the sheet becomes the visible ceiling of the building interior.

Where there is an attic or plenum above the ceiling, it is best to place the vapor retarder nearest the warm space, since the vapor drive is from warm to cool. Ideally, the vapor retarder is placed above the finished ceiling. Above that is insulation, then the attic or plenum under the roof. Ventilation under the roof is still needed, but the vapor barrier stops the greatest source of condensation. The membrane must be sealed around any penetrations and at terminations, especially when the interior space is particularly humid, as in a kitchen or shower area.

Thermal movement

Metal moves more under the influence of temperature change than any other roof material. When properly executed, standard details, such as the concealed clips that attach adjacent panels of structural-type roofs, take movement into account. Floating clips, which incorporate tiny hinges, may be called for. At roof terminations, especially for very large roofs, architects will have to calculate and allow for actual panel movement, using the coefficient of thermal expansion suited to the metal chosen.

Even when movement is taken into account, roofs built with long, continuous metal panels may make loud popping noises from metal rubbing together as the outdoor temperature swings. Sometimes the panel clips bind as the panel lengthens or shrinks, and the popping occurs when the pressure is enough to force the panel through the clip. This binding can be harmful. If clips are improperly installed—either out-of-line with the panel side laps or driven too far into an insulated roof deck, the panel cannot move enough, and dents form ("oilcanning"). When binding is extreme, the metal panel can tear or can pull the clip out of the deck.

While some metal roofing issues can seem daunting, the architect that goes beyond manufacturers' standard details and data will help ensure a reliable installation. Indeed, the perception that metal roofs are more reliable and require less maintenance is key to the impressive growth of of this type—especially in retrofits. ■

Further Information

- *American Society of Civil Engineers, 800/548-2723*
- Architectural Sheet Metal Manual, *Sheet Metal and Air Conditioning Contractors' National Association, 708/803-2980*
- *James Carlson, "Detailing for Standing-Seam Metal Roof Systems,"* Professional Roofing, *June, 1994.*
- Copper in Architecture Handbook, *Copper Development Association, 212/251-7200*
- *Factory Mutual, 1151 Boston-Providence Turnpike, Norwood, MA 02062; 617/762-4300*
- *James Holland, "Drag Loads: Snow and Other Heavy Loads on Metal Roofs,"* Western Roofing, *January/February 1995.*
- *James Holland, "Sealing Tight: The Use of Sealants with Metal Roofs,"* Western Roofing, *September/October 1995.*
- *Chuck Howard, "The Nuts and Bolts of Metal Retrofit Roofing Systems,"* Contractors Guide, *October 1994.*
- *Metal Roofing Systems Association, 1300 Sumner Avenue, Cleveland, OH 44115; 216/241-7333.*
- *Wayne Tobiasson, "Some Thoughts on Snow Loads,"* The Roofing Industry Educational Institute Information Letter, *Winter 1995. REII, 14 Inverness Drive East, Building H, Suite 110, Inglewood, CO 80112; 303/799-7200.*

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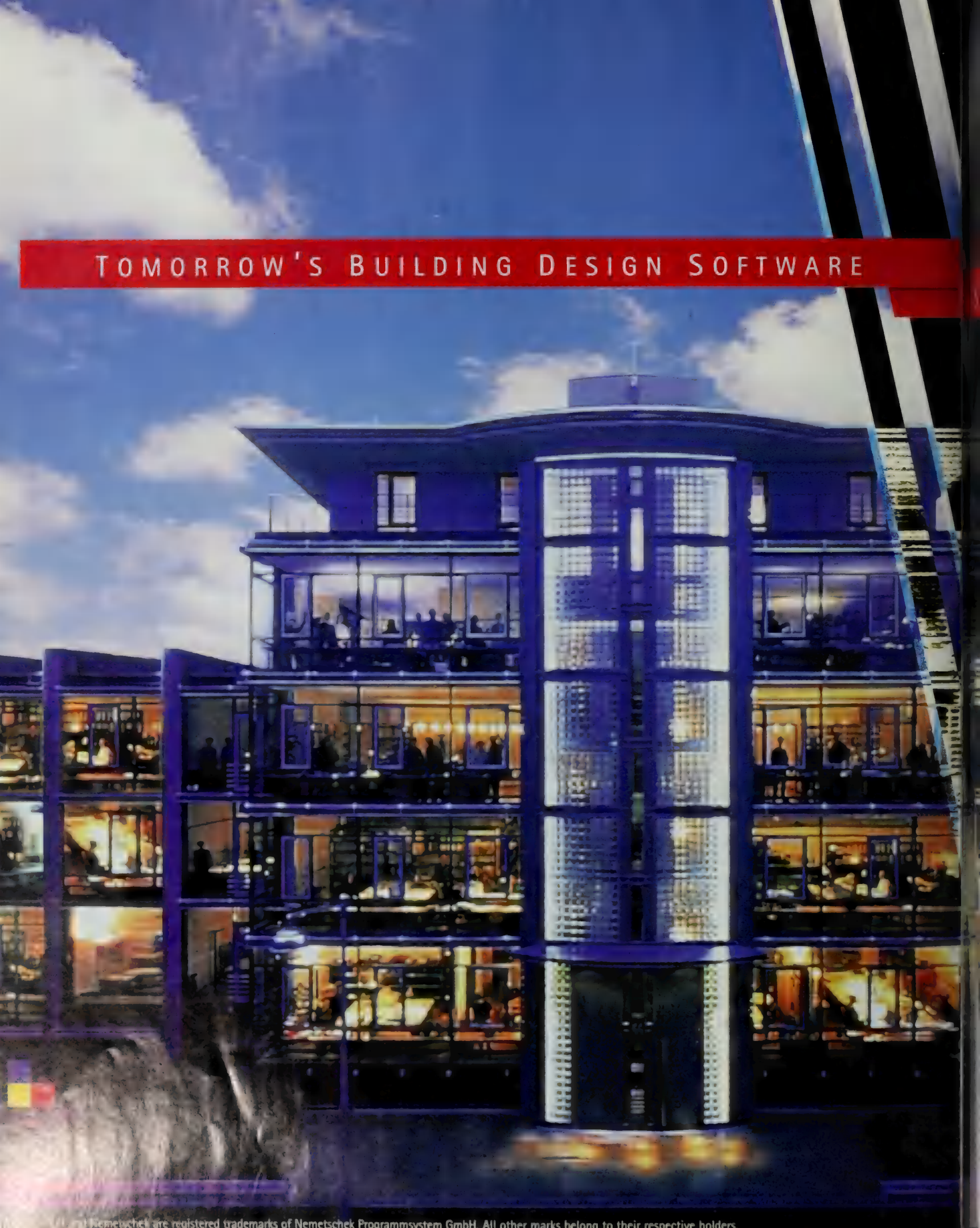


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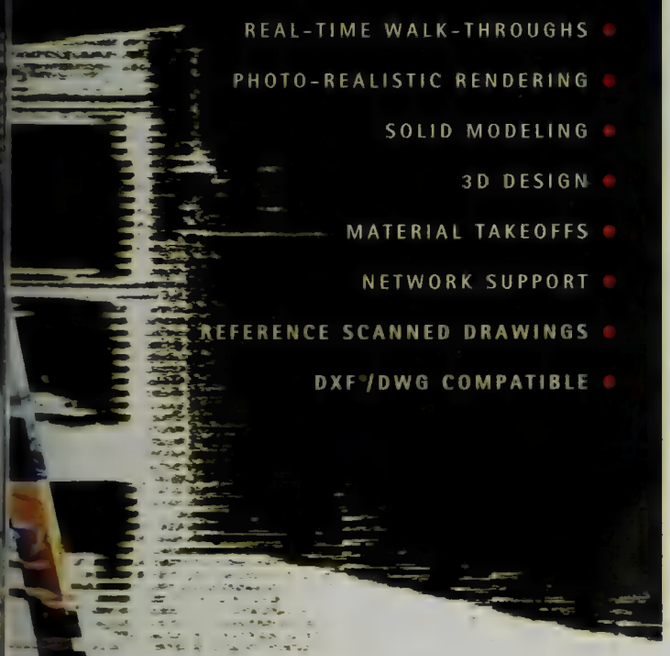
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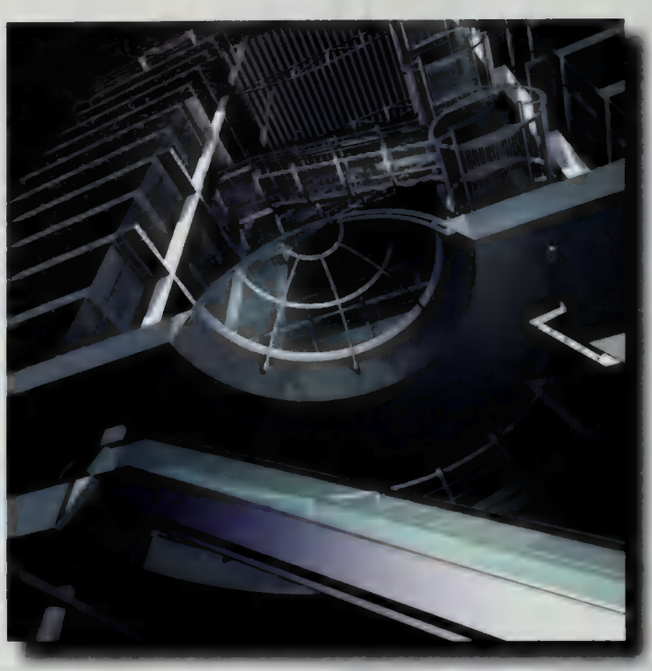
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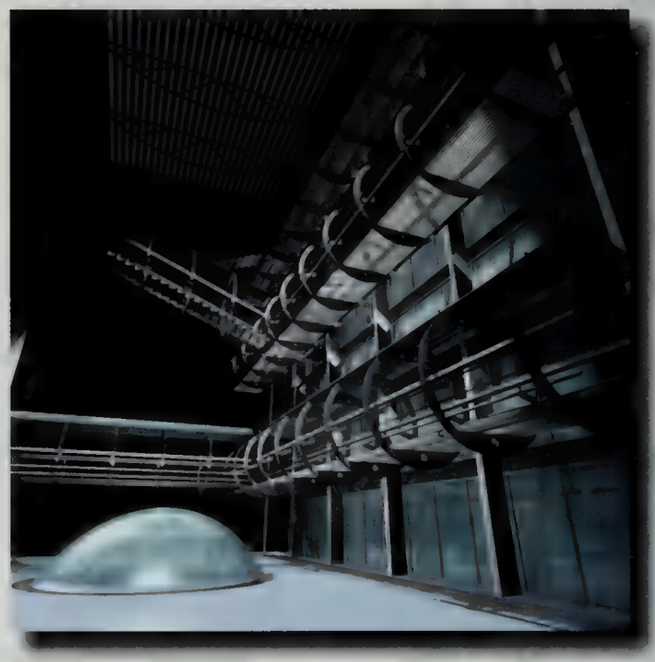
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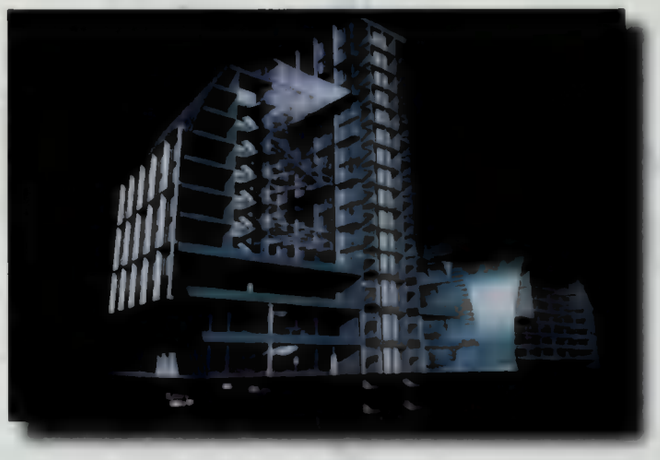
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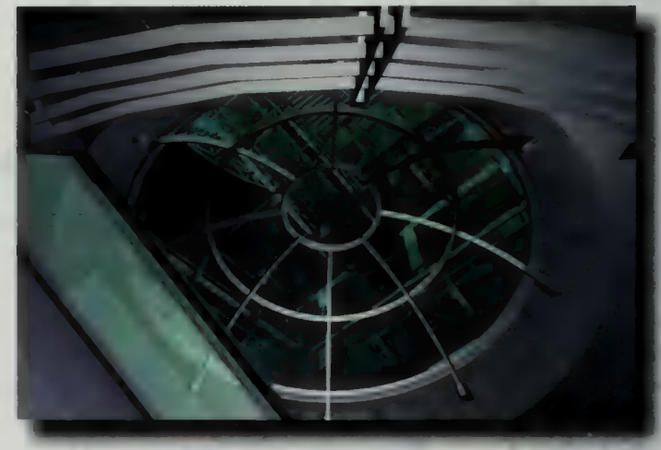
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Who's Who in the CAD Landscape

A GUIDE TO ADD-ON VENDORS, "VIRTUAL CORPORATIONS," AND THE CONFUSING AND EVER-CHANGING DYNAMICS OF THE CAD BUSINESS

by Steven S. Ross

Buying a CAD system used to be so much easier. One company sold you its computer with its proprietary software. It was an entire system solution from a single source. Easy, but expensive. That era of "closed" systems, in which all enhancements had to come from the original vendor, is long since over. Some of those vendors and like Intergraph, remain, but you no longer must accept the single-vendor solution. Today you can mix and match hardware and software. What you get is vastly more powerful and much less expensive, but it is offered by a bewildering array of vendors, and sold through a confusing array of dealers who have a variety of capabilities. And this world is ever-changing. As this story went to press, one of the biggest players, Autodesk, acquired one of the largest developers, Softdesk.

How is the poor buyer to sort this out? And where do you turn for upgrades, maintenance, training, and support? To successfully use and manage today's computer systems, you have to understand the business landscape in which hardware and software suppliers operate. This includes the nature of the relationship that major CAD vendors have with their third-party developer teams and the relationship of vendors and developers with local dealers—if you're lucky enough to have one.

Some definitions

The CAD engine: The largest CAD suppliers build basic CAD applications like Autodesk's AutoCAD and Bentley's Microstation. They have many basic drawing and design tools, but they are generic, highly adaptable to a wide range of end uses. This adaptability eases cross-discipline compatibility: the architect's floor plan, the structural engineer's framing plan, and the mechanical engineer's duct layouts are done with similar tools. These form a core around which a huge variety of products can be developed. All full-featured CAD systems offer a "description" or "macro" language that allows users to automate routine or difficult tasks. Those tasks might include drawing a wall with one mouse movement, or designing a dormer or staircase.

Add-ons: Still, there are limitations to what makers of even full-featured CAD engines care to offer. That's why almost all CAD engines provide "hooks" that allow third parties to attach complete applications to the engine. The strongest hooks are called APIs (applications programming interfaces). Third-party developers are thus enabled to make a huge range of add-on software that customizes the engine to make it work efficiently for anything from generalized architectural design to laying out ductwork, testing stadium sight lines, or calculating the cheapest cut-and-fill excavation for a hillside lot.

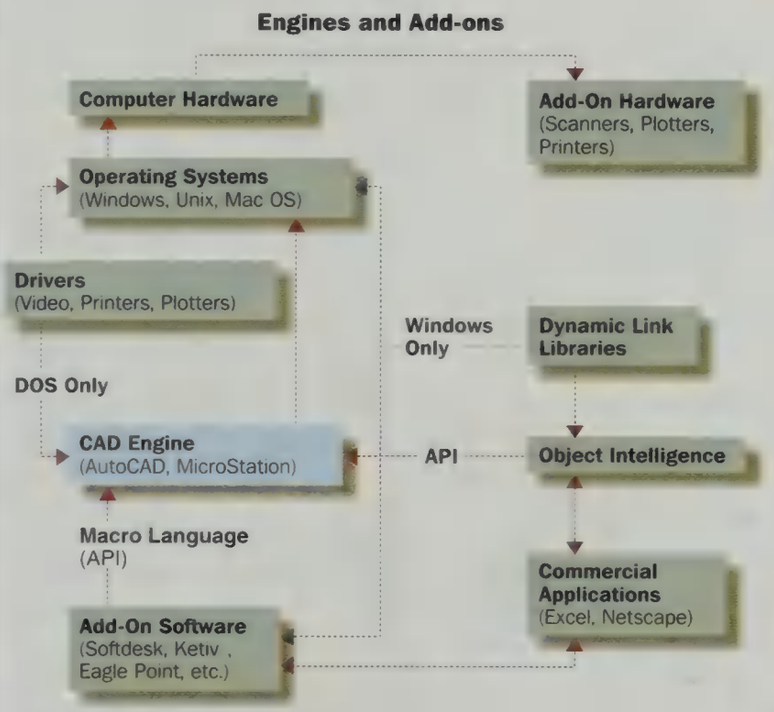
A CAD system that appears seamless may actually be made up of several applications blended together by developers.

Stand-alone programs: Although programs like Nemetschek's Allplan and Graphisoft's ArchiCAD share some characteristics with the engine-and-add-on scheme used by Autodesk and Bentley, these are more suitably thought of as complete all-in-one solutions. Minicad by Diehl-Graphsoft, Architrion, FastCAD, and SoftCAD are other stand-alone programs. If they have the right features, cost, and ease-of-use, these programs come closest to the simplicity that single-vendor solutions used to offer. Stand-alone products may also accept add-ons, but their main marketing thrust is to provide turnkey products.

Understanding add-ons

Perhaps the most complex aspect of the way CAD software is sold today is the way add-ons and CAD engines combine to make useful integrated applications. Autodesk alone has 2,000 separate developers who have produced more than 5,000 add-on programs that work with AutoCAD. Autodesk's chief, Carol Bartz, has been calling this network of developers Autodesk's "virtual corporation." At Bentley Systems, Autodesk's chief competitor, president Greg Bentley calls its "team" an "interpreneurial" organization (the idea is that the various vendors "interoperate"). Bentley says more than 500 independent vendors are writing software for MicroStation.

While such organizations are convenient for developers, architects have every right to be suspicious. Virtual coffee never was as good as



the real thing. What's more, the Europeans—no less computerized than we—have tended up to now to prefer all-in-one solutions from a single CAD developer, even if the final price is higher. Thus, if you buy AllPlan or ArchiCAD in Europe, you tend to get the equivalent of a range of common add-on enhancements in a single package from the same vendor that developed the core CAD software. As David Marlatt, Graphisoft's president, points out, the buyer must compare ArchiCAD's price not just to AutoCAD alone, but to the engine and add-on suite needed to make the products similar in functionality. Another difference with stand-alones is that the buyer purchases the software direct from the developer's sales force or through a specialized dealer.

WHILE STAND-ALONE PROGRAMS OFFER SINGLE-SOURCE SIMPLICITY, ADD-ONS ALLOW UNIQUE, CUSTOMIZED SOLUTIONS.

It should be noted that there are many free-standing third-party programs that add functionality to major CAD software but are not, strictly speaking, add-ons. Perhaps the most common types are file translators or printer/plotter controls. Unfortunately, they cannot be run from within CAD programs. Unless you still use the DOS operating system, the translation software is far more likely to be an API that runs seamlessly within a full-featured CAD package.

Even though CAD developers like Bentley and Graphisoft have been adding more functionality to their core products, there are compelling reasons that you and your dealer may still be cobbling together a system developed by many diverse vendors. In this complex world, technology enables developers to create ever-more specific tools, whether it be for parking-lot paint striping or residential kitchen design. But the cost equation at the giant CAD developers tends to preclude the economical development of tools for small niche markets.

Even firms with very specific needs, however, can find packages that offer a one-stop solution. Some third-party developers license a bare-bones CAD engine and build a seamless combination package around it. Softdesk, for example, bundles special versions of AutoCAD Release 13 with Softdesk add-ons, selling this "CD Plus Special Edition" line only to larger firms and certain government agencies. A key advantage of the Autodesk acquisition of Softdesk is that Autodesk will now be able to offer a seamless package of this type, says Christine Tsingos, vice president and treasurer. (Third parties will still be able to make add-ons for this combination.) Eagle Point Software ships a free-standing visualization product that uses the Autodesk engine. These combination packages are easier to put on your system than installing a CAD engine, then installing the add-ons. And with a sole-source vendor, they should be easier to upgrade as well.

Mega-developers and "strategic affiliates"

As noted above, Autodesk has more independent developers of add-on software than anyone else. Historically Autodesk has left the mixing and matching of add-on products to independent dealers, but has developed its own packages to supplement or supplant those produced by third-parties. Bentley is somewhat more likely to add its own brand name and support personnel to products developed by third parties.

Bentley groups its add-on developers into what it calls "strategic affiliates," each concentrating in a specific area. Each of these, in turn, offers add-on software under its own name, and software from other, smaller add-on developers. One strategic affiliate, BRICS N.V. of Belgium, developed the add-on that became Triforma, for 3D modeling within MicroStation, still selling it under the Microstation name. Bentley improved it greatly. Primavera Systems, the project-management specialist, is the newest Bentley strategic affiliate. It offers WorkPlace Systems, an assemblage of add-ons for facilities-asset management. One of the key advantages of these application suites is that add-on incompatibilities should be fewer. While AutoCAD does not have an equivalent to strategic affiliates, its vendors have have been absorbing each other to create strategic-affiliate equivalents. These AutoCAD mega-developers—Ketiv and Eagle Point—offer a broad product line, everything from drafting aids to visualization tools. Autodesk's acquisition of Softdesk, its largest developer, muddies the waters. "Our developers are very important to us," Tsingos says, but she was not specific about how relationships between it and its megadevelopers will change.

"Object" oriented software changes the rules

A programming innovation that should make CAD programs faster, more powerful, and more versatile is also changing the rules about what CAD systems you buy. CAD vendors are struggling to bring "object intelligence" to drawings. A software object is a collection of information that can be readily manipulated by commands. Thus, a door object is more than a collection of lines that looks like a door. It can have information associated with it, such as its weight; its fire rating; a description of its frame, hinges, and adjacent wall framing—even a standard position for a light switch set into the adjacent wall. But beware! Software-engineering gurus call any set of lines and associated data "objects." The objects that will be most useful to architects, however, can be edited, moved, duplicated, and attached to other items without erasing and redrawing. And they will be recognizable by other members of the building team, who might find themselves manipulating these objects as they add wiring or place ductwork. Jacobus, for instance, has been selling add-on software for MicroStation that makes drawings of plant equipment behave somewhat like an object. A piece of equipment is even able to project the clearances it needs within the building structure.

Among the most hyped AutoCAD API these days—and with good reason—is ARX. It stands for AutoCAD Runtime eXtension, and is the key to writing object-based add-ons for AutoCAD. The initial ARX release did nothing special for end-users. But the version in AutoCAD R 13c4, which appeared in 1996, allowed add-on developers to offer improved functionality, such as the door example above. Bentley says it will release its competing approach, Objective MicroStation, in 1997. It has been calling the object technology itself ProActiveM.

For now the added convenience of some object technology comes at a price, a kind of software "brittleness," in which developer fixes or upgrades to one software element force costly upgrades of all the software it works with. Third-party developers, for example, are incorporating into add-ons such commercial applications as the Microsoft Excel spreadsheet and Access database. The software components often exchange information through Microsoft's clunky OLE (object linking and embedding). This means that Microsoft Office 1997, which contains new versions of Excel and Access, will force upgrades in the linked CAD software. Also, plotters don't work with imported OLE objects.

This approach to object programming superseded an older add-on strategy in which the vendor bought a utility (such as Btrieve for databases) and integrated it into the add-on package. By moving to OLE, the vendor avoids extra programming time and licensing fees.

AutoCAD's description language and APIs offer the greatest variety of ways for third parties to add features to CAD engines. But Autodesk stumbled with Release 13, because bugs in the program held up products by third-party developers and kept users from making the most of the upgrade. After more than two years on the market, the most serious bugs seem to have been wrung out of the latest release. But this has meant users are only just beginning to see a tangible benefit from ARX, although add-on vendors have been working with Autodesk-supplied ARX development tools for two years. These tools will allow software to take advantage of new standards developed by the Industry Alliance for Interoperability (IAI). Under these standards, which other developers are adopting, a door and its associated data are defined as an Industry Foundation Class item. As more doors are added to the project, the software needs only to know how each one varies from the Foundation item. The added door is called a "daughter" object. What's important about this is that it takes less effort to input information, quality assurance is better, and files are much smaller, so screen redraws, plotting, and so on are quicker.

Softdesk released its first ARX-based product, a new version of CAD Overlay, only in early 1996. Its ARX-based version of Auto-Architect, which adds many architectural drawing features to AutoCAD, was due to be released at press time. Bentley Systems' description-language approach allows third-party products to work together in more seamless and user-friendly ways. But, overall, Bentley's system lags behind Autodesk in raw power for creating intelligent objects within drawings.

Both Autodesk and Bentley have invested in Internet tools. Since every piece of data that might come onto the desktop from the Internet is an object, this is an obvious extension of the object approach. Currently, nearly all CAD packages can cleanly exchange and translate files as DXF or DWG formats. IAI standards notwithstanding, easy and complete translation may, at least in the short term, fall victim to the growth of object technology. Softdesk, for example, says objects drawn with its ARX-based tools will always be readable by competing software applications as blocks and entities, but they may lose their "object data intelligence."

The withering of non-Windows platforms

This brings us to another trend that is potentially disturbing: Major CAD vendors are moving to support only Windows 95 and Windows NT operating systems. Autodesk says it will develop only for Windows in the future, although it has said that before and backed down. Bentley develops for Windows first, but has also released MicroStation for various kinds of Unix and for the Macintosh.

Former all-Mac vendors such as Graphisoft and Diehl-Graphsoft (the developer of MiniCAD) have embraced Windows as well. Even IBM, which developed its A&ES software family to run under AIX (the IBM flavor of Unix) has announced a Windows version.

Part of the reason for AutoCAD's push to Windows is that its ARX object system derives its power from Dynamic Link Libraries (DLLs), which essentially are satellite programs, and these run only under

WHAT TO WATCH FOR WHEN SELECTING A DEALER AND A SOFTWARE FAMILY

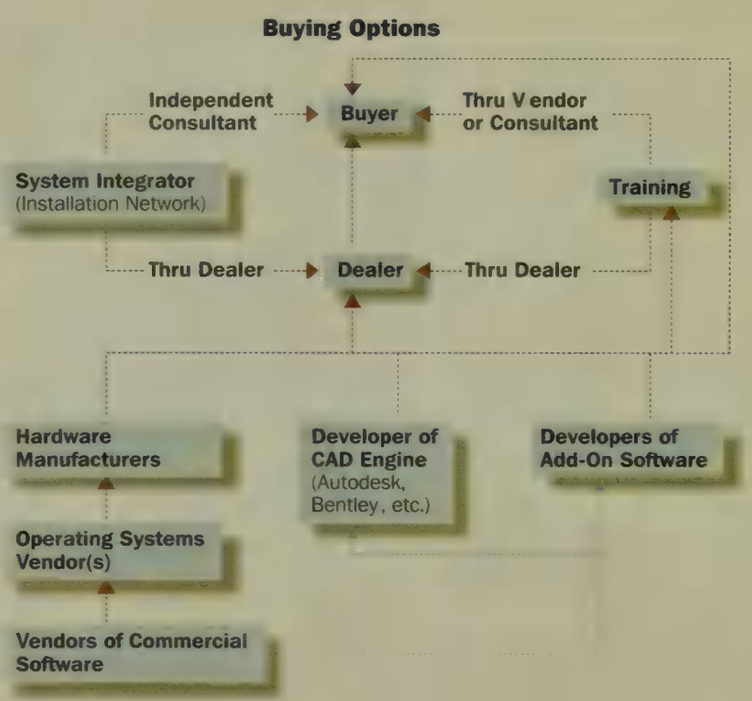
Understand who you are dealing with. There are different levels of dealers. Some are mainly developers (they write software but may sell it as well). Some are value-added resellers, with capability to write small sections of an overall software solution for you. Some are contracted sales forces for a developer. Some are highly focused experts in a specific field (Softdesk calls them Registered Consultants). Check the major developers' web sites for details, names, and addresses of dealers.

Compatibility: Look for add-on software that works with a range of products you are likely to use. You won't have the added expense of buying new software and converting existing data to it. Harper and Shuman, for example, sells facilities-management software that can work with the Oracle database engine or with Microsoft Access or Microsoft's SQL Server.

Out of business: If your software company fails, are you out of luck? Investigate the original source of software your dealer or add-on vendor might sell and ask them how you would be protected.

Because Atlanta-based IdeaGraphix, for instance, had trouble in 1996 distributing speedikon, an architectural add-on developed in Germany, IEZ agreed to escrow the speedikon source code in Atlanta and to give IdeaGraphix full access to the technical details of the speedikon Building Data Model format.

Developers assume their dealers will handle the bulk of upgrading and after-market services. But reliable ones are the servicer of last resort, and users should call on developers in cases where dealers are not handling customer needs.



Buying a CAD system means buying into a dealer or consultant relationship for training and maintenance (diagram).

Look to the future. Your dealer should make sure the add-on products you want are compatible with each other. But only the most technically savvy dealers will be able to reliably predict whether future upgrades to the add-ons will be compatible. Having the dealer call add-on developers to discern their upgrade plans can help allay fears because upgrades may not be coordinated. "We don't do much certification of third-party applications," admits Barron at Autodesk.

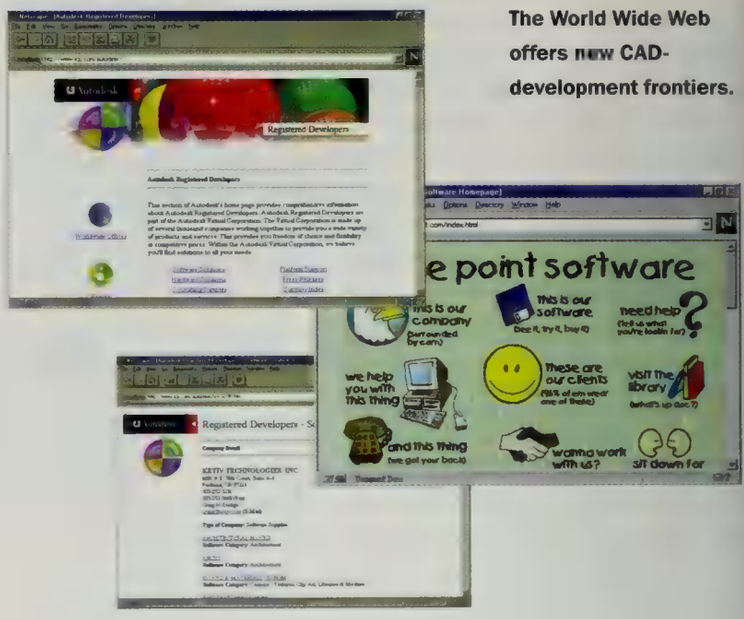
Windows. The DLLs are critical to the "foundation" class and "daughter" object methodology. Most add-on developers lack the financial resources to develop DLL equivalents for other operating systems. Bentley claims that eventually Objective MicroStation will be able to add object intelligence without using DLLs, and so can stay ahead in non-Windows platforms. Unix and Mac platforms may be given new life by Web-based programming languages, such as Java, which in theory will permit writing one DLL equivalent that works on all platforms.

What the Web will mean

The World Wide Web has opened amazing new opportunities for multifirm collaboration and interactive on-line product catalogs [RECORD, October 1996, pages 46-51]. Vendors can also distribute product information, technical data, software updates, and bug fixes on the Web.

The way that CAD programs support the Web may become an important element in the buying decision. Autodesk, for example, has released an entire Web-publishing solution, which uses Netscape Navigator inside AutoCAD. But everyone else is jumping on the bandwagon, too. Bentley has announced its Engineering Back Office, which allows users to store all their drawings and data in one large database, and "publish" it as needed on private or public Web sites. One big advantage of these Web databases is that they make it easy to track updates—whether done by architect, mechanical engineer, or pursuant to construction-phase change order—because all the data are in one place.

Bentley and Autodesk are sniping over which drawing format is best. DWF is very compact and allows the addition of hypertext links to a drawing. It is on the way to becoming an Internet standard, but it is 2D only. Bentley notes that it supports Virtual Reality Modeling Language

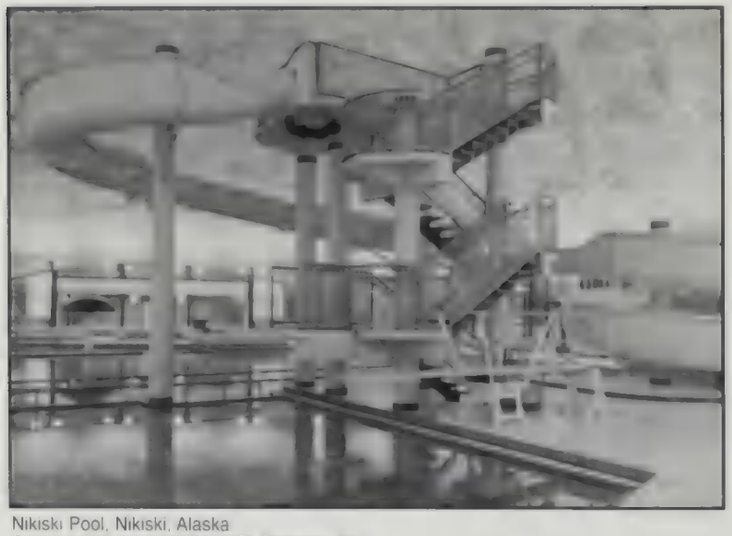


The World Wide Web offers new CAD-development frontiers.

(VRML), a fast-growing 3D Web technology. Autodesk responds that VRML is still in flux and often 2D is what is desired. Both Bentley and Autodesk are using Netscape's web server tools.

The dealer connection

How or whether you use a dealer may be a key element of your buying decision. Some CAD add-on vendors sell direct to consumers (Eagle Point started that way), but almost all of them, Eagle Point included, also sell through dealers. Much add-on software is simply too difficult to



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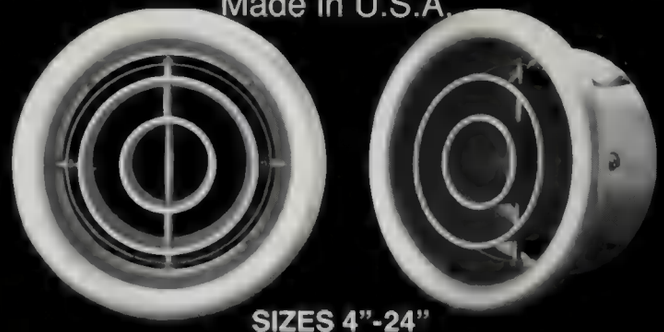
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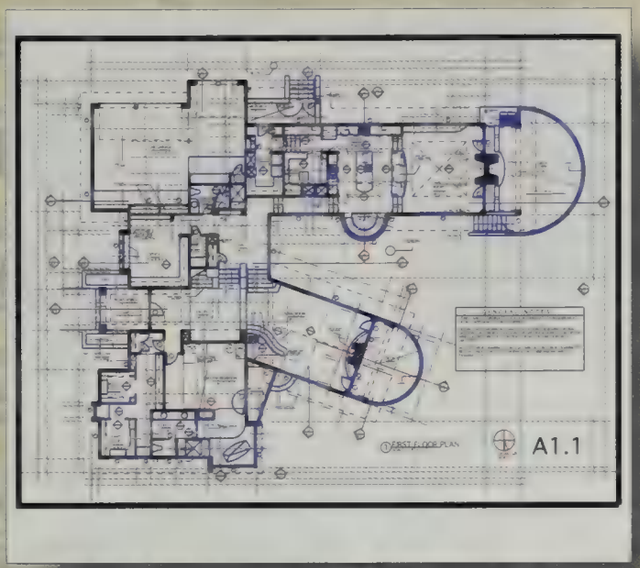
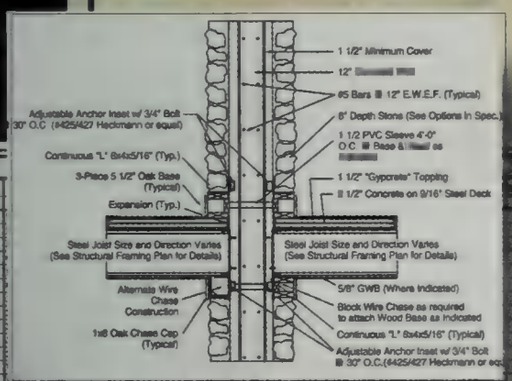


*Image 1



*Images 2

SCHEDULE

101									1x6 wd	1x4 wd
102									1x6 wd	1x4 wd
103									1x6 wd	1x4 wd
104									1x6 wd	1x4 wd
105									1x6 wd	1x4 wd
106									1x6 wd	1x4 wd
107									1x6 wd	1x4 wd
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110									1x6 wd	1x4 wd
111									1x6 wd	1x4 wd
112										
113									1x6 wd	1x4 wd
114	Kitchen	X		12x12 Ceramic	Gwb	Gwb	Gwb	Gwb	Gwb	1x6 wd	1x4 wd
115	Breakfast Nook	X		12x12 Ceramic	Gwb	Gwb	wd	Gpcrt	Gwb	1x6 wd	1x4 wd
116	Rear Vestibule	X		12x12 Ceramic	Gwb	Gwb	Gwb	Gwb	Gwb	1x6 wd	1x4 wd
117	Spa Room	X		12x12 Ceramic	Gwb	Var.	Gwb	Gwb		1x6 wd	1x4 wd
118	Bath w/Shower	X		12x12 Ceramic	Gwb	Gwb	Gwb	Gwb		1x6 wd	1x4 wd
119	Side Foyer	X		12x12 Ceramic	Gwb	Gwb	Var.	Gwb	Gwb / Sloped	1x6 wd	1x4 wd
120	Laundry	X		Sheet Vinyl	Gwb	Gwb	Gwb	Gwb	Gwb / Sloped	1x6 wd	1x4 wd
121	Mud Room	X		Patd Concrete	Gwb	Gwb	Gwb	Gwb	Gwb	1x6 wd	1x4 wd
122	Tool Room	X		Patd Concrete	Gwb	Gwb	Gwb	Gwb	Gwb	1x6 wd	1x4 wd
123	Garage	X		Patd Concrete	Gwb	Gwb	Gwb	Gwb	Open	1x4 wd	1x4 wd

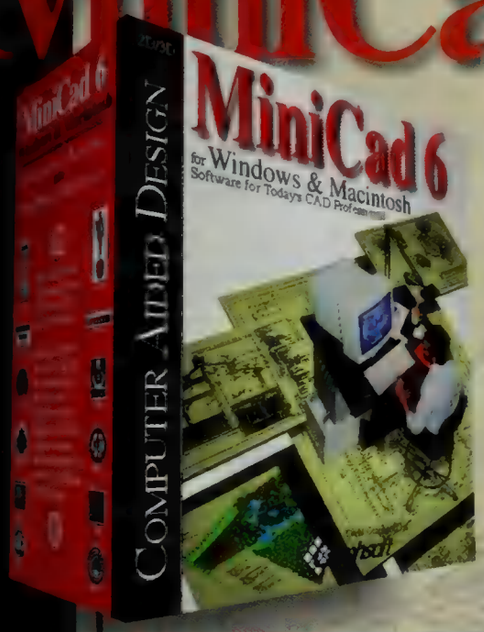
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Charles Perrygo
Senior Systems Engineer
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*Image 3

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*Image 1 - Courtesy of Francois Levy, Dick Clark Architects, Austin, TX
*Images 2 - Courtesy of Cameron Lacy, DCL Architects, Wayne, PA
*Image 3 - Courtesy of David Brunke, Herring & Trowbridge Architects, Herndon, VA

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service any other way. [See story page 173 for tips on dealing with dealers.] There are single-person dealers who service Fortune 500 companies, says Chris Barron, in charge of A/E/C marketing at Autodesk. But most large dealers have developed expertise in multiple professional specialties. These days, the most successful dealers often "do it all." They offer turnkey solutions that might include hardware, installation, networking, CAD software, add-ons for the CAD software, and non-CAD commercial software for accounting and word processing.

The biggest dealer margins these days are often in training. The smallest margins are in hardware, with the exception of super-high-end graphics adapters and super-large (20-in. and up) monitors. The result is that dealers are evolving—offering more training, even sponsoring seminars and user groups. But they are arranging with large local computer stores to provide hardware and installation. Training costs are an important factor in the buying decision. Hardware and software for a high-end CAD seat (including engine and add-ons) will run to around $10,000. But training can run $3,000 to $10,000 or more per person, depending on the number and complexity of add-ons (rendering and other visualization tools having an especially high learning curve), and the degree of interaction with contractors or owners using the software. And training never stops; there's always a new add-on to master, it seems.

Dealers who get all or most of their software from one developer have the most flexibility on pricing. That's because the developer has done the work necessary to make sure all the add-on software fits together cleanly. And the software interfaces that smooth the transition between add-ons, and between add-ons and the CAD engine, are likely to be smoother, which cuts training costs. Finally, the dealer is more likely to get better discounts from a developer.

With margins so thin, and hardware or software changes coming so fast, repair and servicing channels for hardware and commercial software are convoluted, at best. Expect long waits for telephone technical support, repairs, and replacements. You may also experience a reluctance to make good on warranties.

The clouded crystal ball

Among the frustrations for CAD users is that changes come so thick and fast users are perpetually faced with mastering new technologies, desirable though they may be. CAD-on-the Web, for example, is not only new, it is also coming in waves with new announcements every few weeks. The Web may allow the unleashing of Internet-based mega-dealers, but it also gives easy access for low-capitalization startups. Among CAD vendors, there is not yet an emerging web "winner."

Obviously the combination of Autodesk and Softdesk creates a new juggernaut. (Autodesk has an estimated 40 percent of its claimed 800,000 seats in the A/E/C fields, versus Microstation's 140,000. Softdesk claims about 225,000 for its various products, but almost all of them attach to AutoCAD.) But that doesn't mean you should strike from consideration any software application that appears to meet your needs. Autodesk's acquisition of Softdesk was driven in part, says Tsingos, by customers' desire to have a single vendor to turn to, suggesting that the argument the stand-alone vendors have been making is a compelling one. Autodesk is now in a position to set the pace in new technology, such as for objects. But its competitors are large and feisty enough (keeping Autodesk from increasing market share over the last two years, for instance) that compatibility across applications and platforms is, if not assured, highly likely. ■



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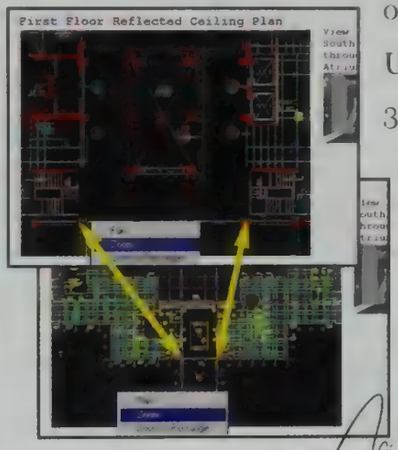


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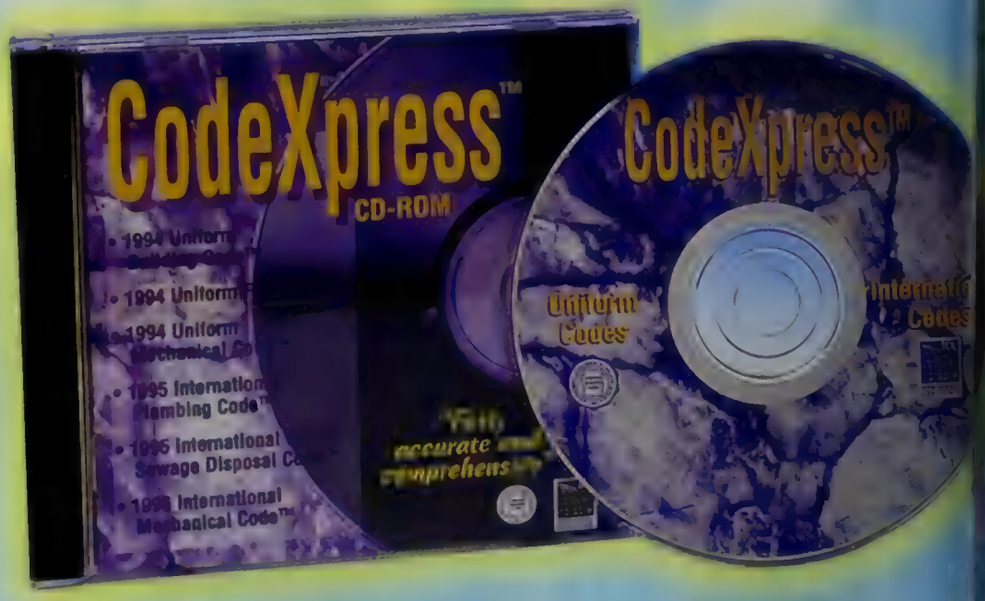
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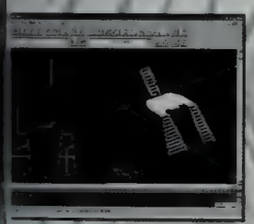


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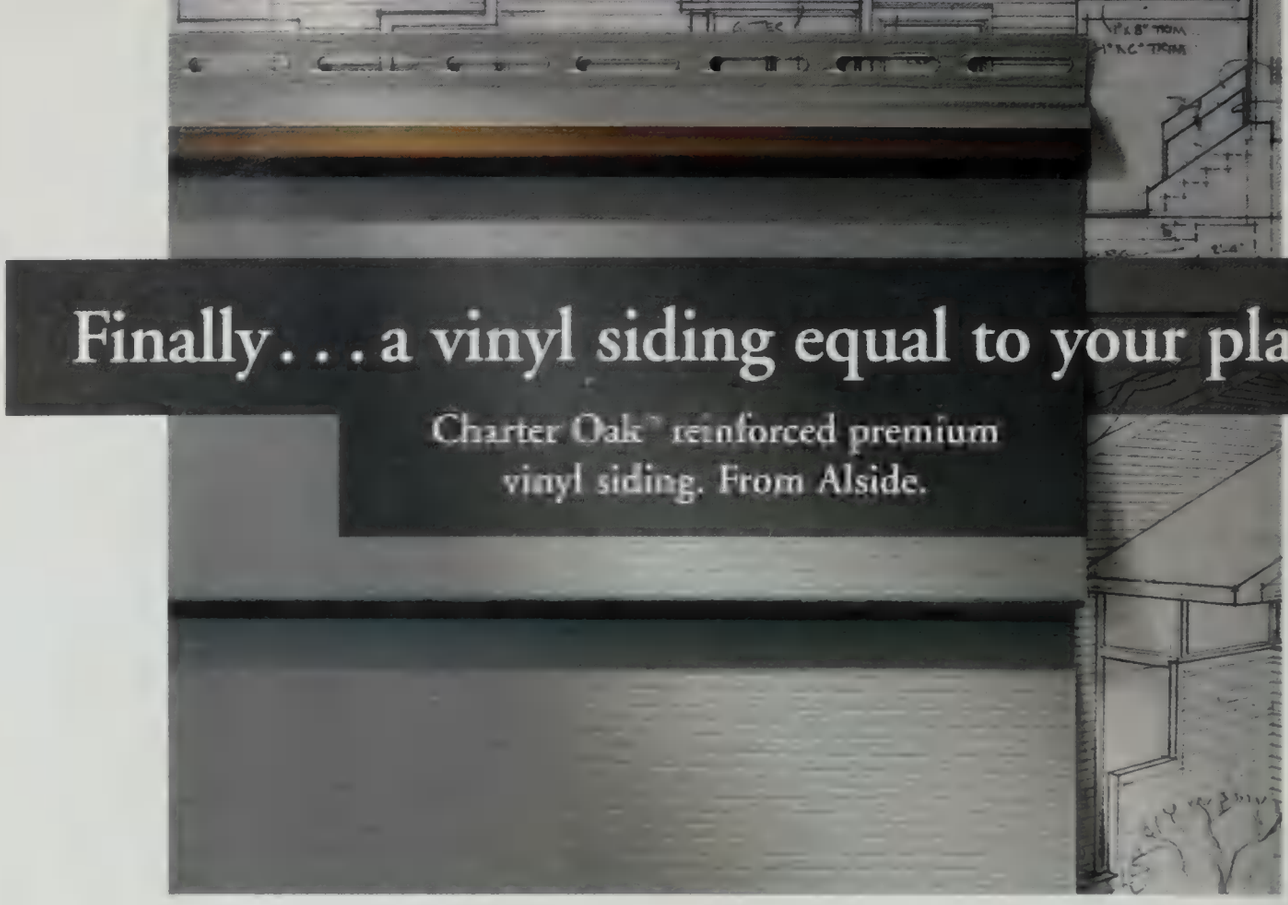
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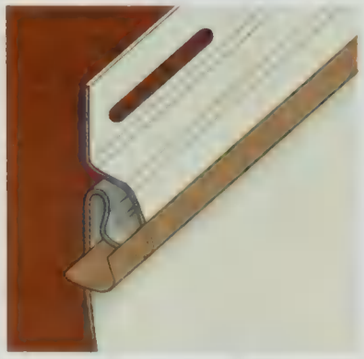
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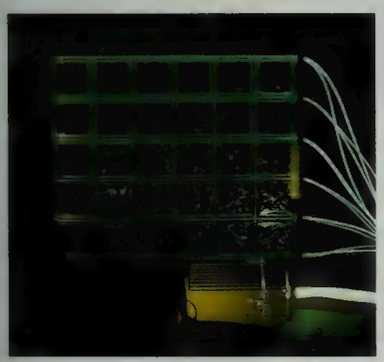
NEW PRODUCTS

New Products has a new look this month, but continues to feature the new building materials, decorative options, specification-driven products, and technical literature that we, the editors, feel will be most useful to architects, interior designers, and other design professionals—RECORD readers. Products are selected for coverage based on our view of their newsworthiness and value, and we'd appreciate hearing from any manufacturers with products of interest to the design marketplace. Product specifiers, please let us know how this section can help you better, and keep us posted on innovations you come across that might deserve publication.—*Joan Blatterman, New Products Editor*

EASY TO ILLUMINATE GLASS BLOCK INSTALLATION SYSTEM

The popularity of glass block has promoted the development of several proprietary systems intended to make block walls and partitions easier to install. Traditional mortar lay-up calls for a good degree of skill, and the needed mortar setting time slows construction. Also, while light-refracting glass blocks are a natural for fiber-optic illumination, it's not easy to insert cable into the wall without having mortar obscuring the light-emitting cables.

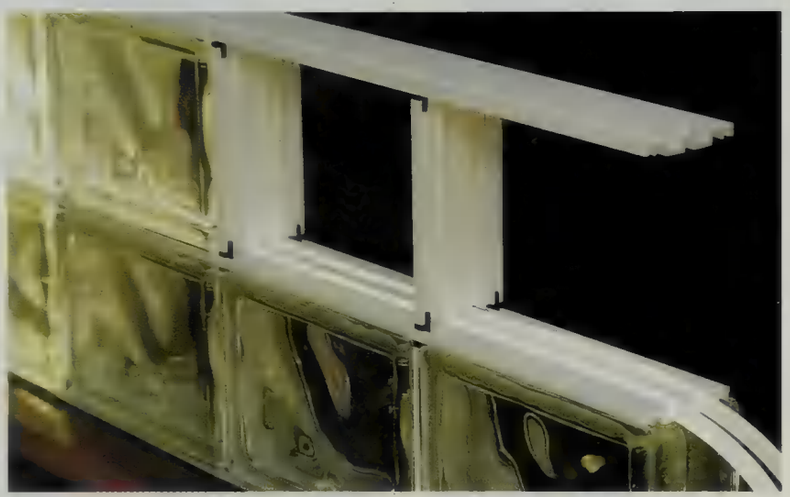
The Swift-Track system, designed by a building contractor familiar with the difficulties of mortared installations, is intended to simplify both assembly and lighting.



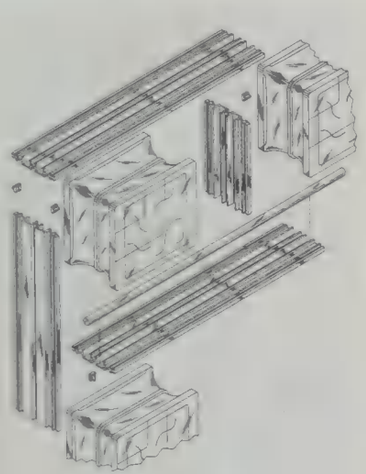
The new system (photo, right, and exploded view, bottom right) positions individual blocks within a rigid, extruded-PVC spacing grid, with the weight of the block taken by the outside edges of the extrusion. The grid is recessed a bit from the outer edge of the block to allow for unobtrusive application of silicone caulk along the joints. Two rounded channels, about 1/2-in. wide, can hold solid-core or bundled fiber-optic cable. Horizontal and vertical connections are made using an interlocking clip that allows the cable to be placed, without interference, on both sides along the center line of the block. Mechanics can use the same space to install reinforcing rods to meet seismic loading as required. (A Swift-Track assembly will be tested to Dade County's demanding high-wind missile-impact standard this spring.) The illuminated glass-block counter (below) is an example of the kind of lighting effects possible.

Because the grid and connectors create an uninterrupted channel, fiber-optic cable can be inserted after the wall is finished. The channel can also be used for thin, low-voltage lighting strips or to distribute voice and data wiring.

The connecting device holds horizontal to vertical wherever they meet, and lets the designer use different sizes of glass block within a wall—a course of 8-in. block on top of 4-in. block, for example—as long as the final, overall measurements coincide. Since the grid is essentially cut to fit on site, any make of glass-block unit can be accommodated. Holes can be punched in the PVC grid if vertical cable runs are wanted. Shown here in white, the grid can be specified in clear PVC as well; other colors can be ordered for large projects. 201/440-5116. Coleman Enterprises, Little Ferry, N.J. CIRCLE 201







Now there's no question which refrigerator goes best with a Viking range.



At long last, the appliance which makes the Viking kitchen complete. The new Viking built-in refrigerator/freezer.

It has the professional-style design you'd expect, along with enough food storage space to entertain a small army. Or a few hungry teenagers.

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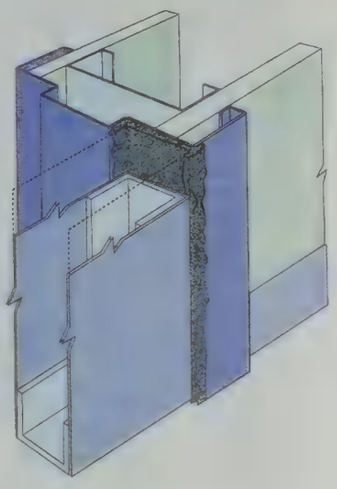
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CIRCLE 73 ON INQUIRY CARD

▸ Hot smoke gasket

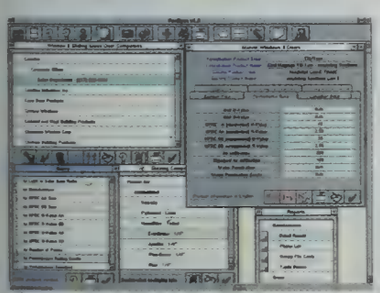
An intumescent-graphite strip lets rated door and frame assemblies meet new positive-pressure fire tests, and can be used with the S88 door seal that blocks passage of gases at ambient temperatures. The 1/2-in.-wide adhesive-backed strips can be painted to match the frame, and are said not to deteriorate over time. 800/283-9988. Pemko Mfg. Co., Ventura, Calif. **CIRCLE 202**





▲ Foster Hardware

Designed by British architect Sir Norman Foster, Fusital levers subtly change in appearance with the material selected: metal, plastic, wood, black rubber, or leather. Collection includes pulls and other fittings. 800/423-7161. Valli & Valli (USA), Inc., Duarte, Calif. **CIRCLE 203**

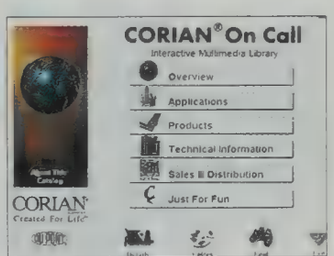


▲ Window-option CAD

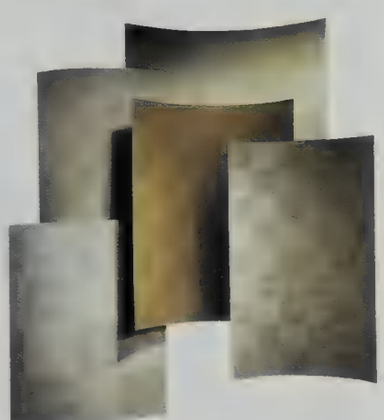
FenSpec selects for an architect's own criteria from a database of over 3,000 window and glazing possibilities. Queries can sort for glass tint, shading coefficient, frame construction, acoustic performance, location of vendor—any combination of features—and output selections to a printer. Windows version: $89. To try: eneraction.com/~skapp (Web page); 800/786-4FEN. EnerAction, Inc., La Mesa, Calif. **CIRCLE 204**

▼ Interactive manual

Corian On Call, DuPont's free CD-ROM, is an architectural walk-through of design, technical, and application information about Corian solid-surface material. Includes video clips of actual installations, and lets the user manipulate 51 colors and all style options within a virtual environment. 800/426-7426. DuPont Co., Wilmington, Del. **CIRCLE 205**



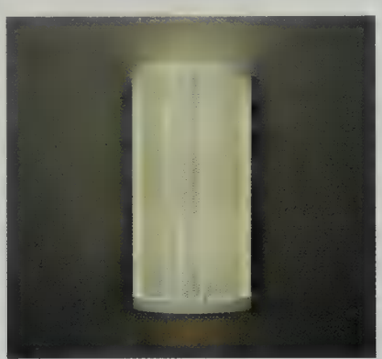




◂ "Plaster" wall coverings

Encausto Type II vinyls are now made in varying scale patterns and 15 colorways. Collected in the Encausto Series Big Book, patterns are said to have an appearance of hand-rubbed plaster and wax. Custom colorations are a specialty. 212/807-7300. Innovations In Wallcoverings, Inc., New York City. **CIRCLE 207**





▲ Metal-shade sconce

Colonnade fixture meets ADA projection guidelines; shade is perforated stainless steel or aluminum with a removable mylar backing. Offers brushed-, polished-, or "cycloned"-finish options in 14-and 18-in.-high versions. 414/757-1088. Advent Lighting, Greenville, Wis. **CIRCLE 206**

▲ Egyptian air

Michael and Cecilia Kirkpatrick designed the Nile chair with the subtle arcs and canted back seen, perhaps, in Middle Kingdom frescos. Made of cherry and sleekly upholstered, chair is suitable for corporate or dining use. 800/438-4830. Charles McMurray Designs, Charlotte, N.C. **CIRCLE 208**

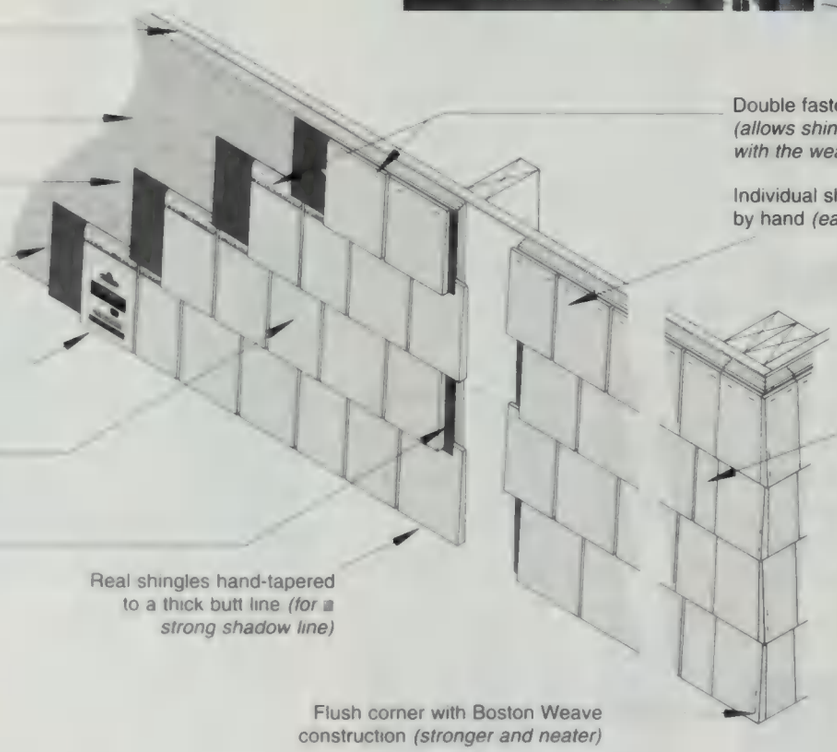
▼ Carpet-on-the-spot

Part of this mill's new Sisal Style line, Savanna is a 36-in., modular commercial carpet available on a 21-day lead-time Pattern Express program. Large square carpet units are said to combine seamless esthetics with modular convenience. Samples offered. 800/241-4826. Milliken , LaGrange, Ga. **CIRCLE 209**



If you want a siding panel system with real tapered shingles, you'll have to take these other exclusive features along with it.







The only way you can get even ***one*** of these features is to specify Cedar Valley. Then you get all of them. (Or, conversely, if you don't specify Cedar Valley, you won't get any of them.) Only Cedar Valley uses individual, tapered Western Red Cedar shingles in a panelized siding system. The other features give you greater design flexibility, confidence you'll achieve the real shingle effect intended with assurance of proper application and long-lasting, trouble-free performance.

CEDAR VALLEY SHINGLE SYSTEMS

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CIRCLE 60 ON INQUIRY CARD

RESIDENTIAL SIDINGS: VINYL AND OTHERS

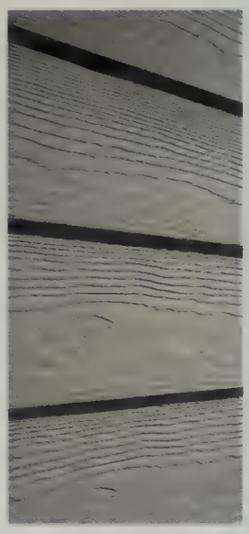
The "gold standard" of traditional-style clapboard sidings is clear cedar, a natural material that weathers gracefully over time. But cedar, once painted, does need to be refinished on an ongoing basis, as thermal- and moisture-driven movement within the wood itself gradually cracks through coatings.

Vinyl, originally a recovering product homeowners viewed as a lower-cost, lower-maintenance alternative to wood, has improved to become the exterior choice for many residential architects. The pronounced "grain" patterning of earlier vinyls is more subdued, even gone entirely; UV-inhibitors extend long-term color performance and permit the use of deeper shades. The gloss characteristics of vinyl and other smooth (non-cedar) sidings is addressed by ASTM D 3679; the vinyl-siding industry has not yet agreed on a description that permits a real comparison of gloss-appearance levels among manufacturers. The main in-use problem with vinyls continues to be over-nailing by the installer, where fasteners crimp the material and cause it to buckle from thermal movement.

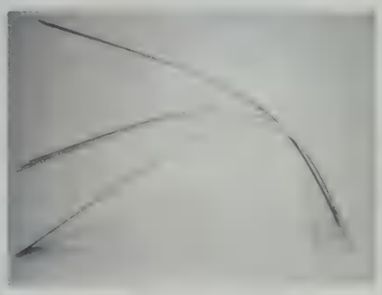
The Society of the Plastics Industry offers designers a kit with vinyl siding application instructions and video. Call 202/974-5326.

► Stainable siding

Eternit Siding is made of autoclaved, fiber-reinforced cement, a non-combustible material capable of resisting extremes of humidity and corrosive environments like salt air. Its design intent is to come as close as it can to natural cedar; 12-ft-long planks are offered in Traditional Smooth, Traditional "Cedar" (photos, right), Country Smooth, and Country Rough sawn textures. Siding needs to be painted or stained upon installation. Said to cut easily with diamond-tip saw blades. 800/233-3155. Eternit, Inc., Blandon, Pa. **CIRCLE 210**







▲ Reinforced vinyl siding

Charter Oak panels, the plank above the fulcrum point in the sag-test photo above, are made with an integral PVC reinforcement said to provide superior rigidity, making individual sections easier to handle during installation and insuring straight and even coverage even over bowed and uneven substrates. Panels can be cut with standard tools; texture is a subdued oak grain, available in 12 low-gloss colors. Sample program offered to architects. 800/922-6009. Alside, Inc., Akron, Ohio. **CIRCLE 211**

▼ Chameleon-like exteriors

Described as "replica siding," Nailite polypropylene panels come in interlocking sections 18-in. deep by 3 1/2-ft long. The injection-molded polymer and baked-on finish used are said to capture both the texture and natural-appearing colorations of hand-split shakes (pictured), brick, stone, and cedar shingles. Suitable as siding or an architectural accent on building elevations up to 40-ft high. 305/620-6200. Nailite International, Miami. **CIRCLE 212**





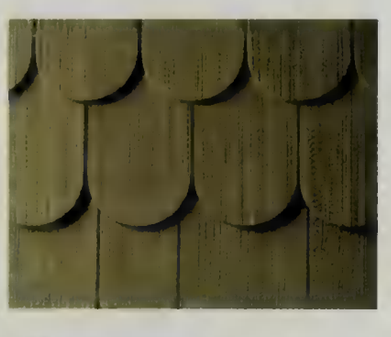
▲ Stucco-pattern panel

A new vertical siding has a non-directional, "knocked-down" texture. A blend of Portland cement, sand, cellulose fiber, additives, and water, panels are said to install with ordinary carpentry tools. They come 4-ft wide by 8-, 9-, and 10-ft high. 714/348-1800. James Hardie Building Products, Mission Viejo, Calif. **CIRCLE 214**



◄ Composite clapboard

Resembling sawn lumber with a 5/8-in.-thick, square edge, Classic Select lap siding, in nominal 6- and 8-in. widths, comes in a 16-ft length that reduces the number of butt joints on a given exposure. Boards are factory-primed on the face and all four edges, ready for a final on-site painting; will not warp or swell. The consistent density of the engineered wood-fiber siding is said to make it easier to paint, and to let the paint itself perform up to twice as long as on dimensional lumber. 800/BUILDGP. Georgia-Pacific Corp., Atlanta. **CIRCLE 213**



▲ Shingle accent

A polymer decorative shingle, half-round panels are one of the exterior accents available in Cedar Impressions sidings. Edges interlock for a seamless appearance. 800/233-8990. CertainTeed Corp. Valley Forge, Pa. **CIRCLE 215** *(continued on page 190)*

▾ Window style options

Decorative muntins are available as a retrofit or original-purchase option, providing a custom appearance without otherwise changing the window unit. A removable wood perimeter grille designed to snap into frames with a concealed pin, Fashion Grilles come in five wood finishes and seven styles, including diamond-shaped Silhouette, pictured. 800/553-4157. Weather Shield Mfg., Inc., Medford, Wis. **CIRCLE 216**





▴ Watercolor-pattern rugs

Artists Brad Davis and Janis Provisor of Fort Street Studio have rendered their free-flowing, blurred-edge watercolor technique in plush area rugs hand-knotted by independent artisans in Hangzhou Province, China. A computer scan of the artists' original work color-codes the yarns needed to translate subtle, bleed-edge designs into a pile texture made of wild Dandong silk, worked into a cotton backing. 212/752-9000. Stark Carpet Corp., New York City. **CIRCLE 217**

► Startup 3D

A new line described as offering high-powered 3D graphics options, as well as multimedia applications such as Web authoring, at an entry-level price, TD PCs and Personal Workstations start at $1,495. Products include Pentium Pro processor and Windows NT preloaded. intergraph.com/ics (Web page); 800/763-0242. Intergraph Computer Systems, Huntsville, Ala. **CIRCLE 220**



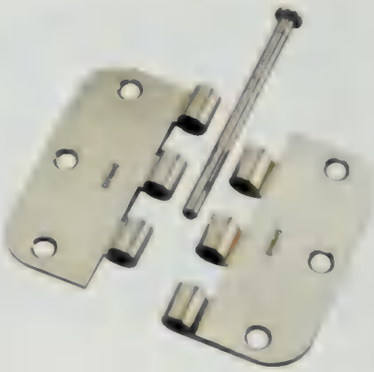


▴ On (to) the table

Tables represent a new venture for this manufacturer of casegoods and seating for the contract market. Shown here: Sagebrush, the first table collection. Oxidized-metal tops with a soft patina convey a Southwestern feeling; wood or metal bases can be selected. A "Designer Participation" program allows for a project-specific combination of size, height, top material and shape, base, and finish. 800/444-8812. Geiger Brickel, Atlanta. **CIRCLE 221**

► Universal door hinge

The six-knuckle RD756 is described as a time saver for residential builders. Both leaves are exactly the same, so hinges can be installed in advance on frames and pre-hung doors. Hinge is steel with US4 satin-brass finish; 5/8-in. radius. Also new: three-knuckle Grade I architectural hinges, the CB1900 Series. Specification guide: 800/337-4393. Stanley Commercial Hardware, New Britain, Conn. **CIRCLE 218**



▾ Architectural carvings

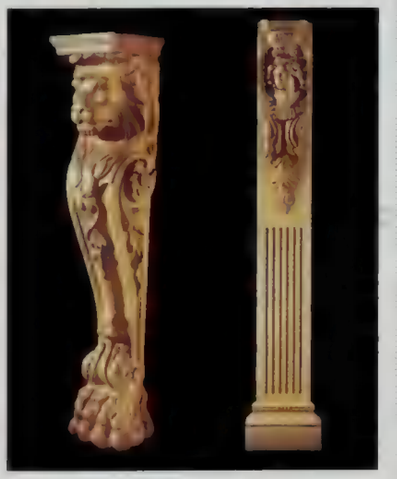
Over 500 interior elements—door panels, corbels, mantels, railings, moldings, linenfold paneling—are produced from hard maple and red oak. Economies of scale and CAD-M routing techniques used are said to keep prices "affordable." 310/532-1400. Raymond Enkeboll Designs, Carson, Calif. **CIRCLE 222**



► Dakota Mahogany flooring

This South Dakota quarry now offers six different granite colors in large, 12- and 18-in. tiles suitable for heavy-traffic commercial applications such as retail malls and airports. Finish options: polished, honed, sandblasted, and thermal (flamed). A free promotional kit includes a videotape describing production and fabrication methods, tile and cement-colored mortar, and literature. 800/843-3[illegible] **CIRCLE [illegible]**





▴ Cam-and-roller closer

Part of a line of accessibility related door operators and fire/life safety closer-holder-release devices, the TS 93 closer is a new track-style device with a cam and roller mechanism said to ensure smooth opening and secure closing more efficiently than typical rack-and-pinion closers. Unit can be specified to firmly close pocket doors opened up to a full 180 deg. 800/523-8483. The Dorma Group, Reamstown, Pa. **CIRCLE 223**

Continued on page 188



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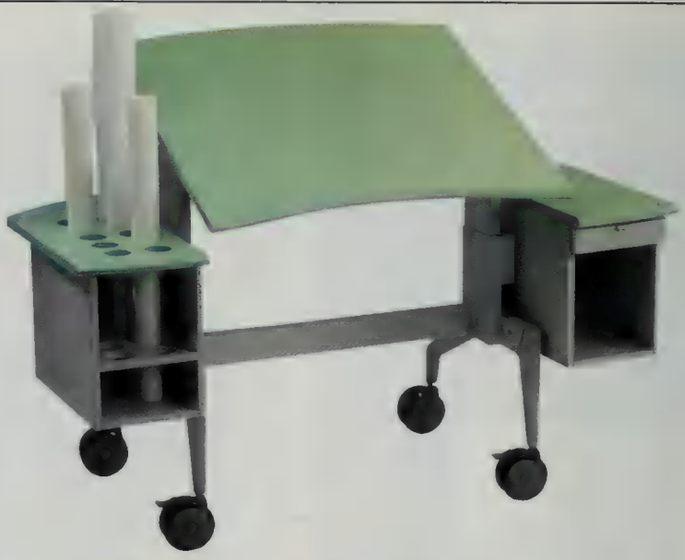
CIRCLE 75 ON INQUIRY CARD

PRODUCT BRIEFS

► Customized entry

The Chandelle-pattern door pictured is one of this maker's Advent Collection doors, which can now be ordered with vision lights in decorative glazings. Intended to offer a degree of custom-design potential in a mid-price entrance, the series are stile-and-rail doors with routed patterns in board inserts. Doors can be ordered for indoor and outdoor use, and are shipped primed and ready for on-site painting. 800/952-4057. Simpson Door Co., McCleary, Wash. CIRCLE 224







▲ Microcassette recorder

The Voice Write 42 recorder can "take dictation" on building sites or record client meetings. Voice-activated unit works in single-user and conference modes. 800/708-7088. Lanier Worldwide, Inc., Atlanta. CIRCLE 225

▼ Rolling service doors

This manufacturer of rolling fire and service doors, rolling grilles, counter shutters, and related safety devices was able to supply a customized door installation that met the appearance criteria required for the renovation of Chicago's Navy Pier, a land-marked property. Service doors can be specified to meet severe wind- and impact-loading tests, including Dade County, Florida's, missile-impact tests. 800/959-9559. Atlas Door, a Clopay Building Products Co., Orlando, Fla. CIRCLE 227



▲ Copper blends in

Paintable, small-diameter pipe lets new fire sprinklers fit into the historic fabric of Pennsylvania's Capitol. (www.piping.copper.org). Copper Development Assn., New York City CIRCLE 228

▲ Mobile drafting furniture

Freestanding units designed for "non-territorial spaces," Mobile Task Furnishings allow for easy reconfiguration. Pieces support a variety of computer needs, with cabling chases, height-adjustable worksurfaces, and keyboard trays. Shown: an angled drafting surface, with attached saddlebags that hold drawings. 905/851-2826. Egan Visual, Inc., Woodbridge, Ont. CIRCLE 230



► Structural hardwood

Now offered in decking, Iron Woods—sustainably grown Ipe, Jarrah, and Bangkirai—will perform for decades without maintenance, sealers, or preservatives. Clear-grade lumber has a Class A fire rating. 414/445-8989. Timber Holdings, Ltd., Milwaukee. CIRCLE 229

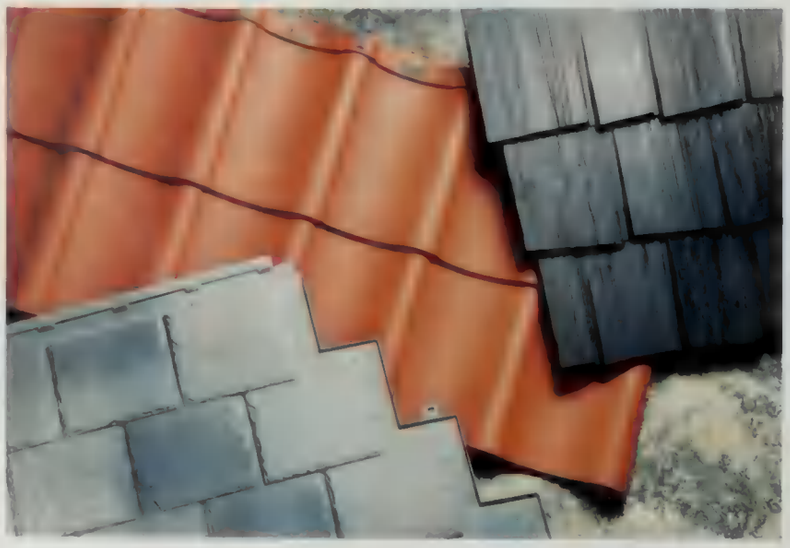




▲ Tilt-turn window

Solid-wood windows work European style: sash can turn in like a casement, or tilt at the top for secure, draft-free ventilation. Custom shapes and monu-

ordered with any



▼ Resin roofing

GE supplies Noryl PPO resin to several different manufacturers for use in light-commercial roofing panels that replicate the detail, texture, and colorations of natural cedar shakes, slate, and clay barrel tile. The material is said to offer very good moldability, light weight, weatherability, and fire resistance. Noryl roofing is currently used on McDonald's, Pizza Hut, and several Disney installations. Panels interlock, and average only 65 to 90 lbs per square. 800/845-0600. GE Plastics, Pittsfield, Mass. CIRCLE 231

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CIRCLE [illegible] ON INQUIRY CARD

(continued from page 185)

▼ Stay-smooth siding

A reinforcing feature on Wolverine's Benchmark siding, fiberglass rods act to stiffen panels against any tendency to conform to wavy substrates. The extra rigidity makes individual lengths of siding easier to handle and install. The rods also let the installer lock adjoining panels together by pushing rods, overlapping edges and holding them straight for a tighter fit all along the course, minimizing edge-to-edge gaps. 888/838-8100. Wolverine Vinyl Siding, Livonia, Mich. **CIRCLE 233**





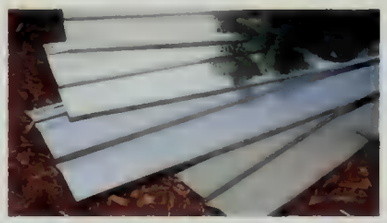
▲ Realistic wood look

Like other sidings from Alcoa, Lake Forest Premier offers a range of coordinating decorative exterior trim elements such as 4-in. corner posts, soffits, shutters, and door surrounds. Suggested for abuse-prone multihousing exteriors, its multiple-tone wood grain pattern is protected from UV degradation and weathering by a top layer of clear Kynar 500 resin. Siding comes in eight colors, including Walnut, Sierra Clay, and Wheat. 800/962-6973. Alcoa Building Products, Sidney, Ohio. **CIRCLE 234**



▼ Stained-cedar appearance

Said to have the random-grain texture and attractive variegated colors of natural, stained cedar, Timberland vinyl resists scratches such as those from adjacent shrubbery. Siding comes in double-4 and double-4 1/2-in. Dutch lap profiles. 800/251-3300. Rollex Corp., Elk Grove Village, Ill. **CIRCLE 235**



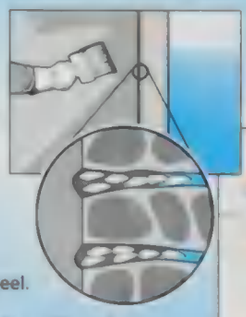
▲ Clear-face plywood siding

Breckenridge is described as a "premium grade" plywood siding made with select, clear face veneers that have specific grain characteristics. Offered in three- and five-ply configurations, Breckenridge can be ordered in different grooved or ungrooved patterns. For use over sheathing such as plywood or composition board, siding can also be applied directly to studs. A solid-color acrylic finish, semi-transparent or opaque stain, or exterior house paint should be applied after installation. 541/679-3311. Roseburg Forest Products, Roseburg, Ore. **CIRCLE 236** ■

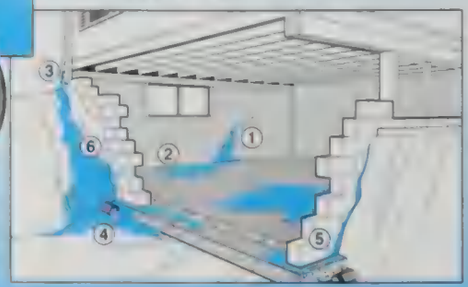
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High-strength concrete

A 104-page bulletin contains articles published in *Concrete International Magazine* and other professional journals, compiled to provide technical and design information to readers who would find it useful in practical applications. Papers define high-performance concrete—what it is, how to insure getting it, and the ratio of cost to load capacity—with many graphs and some photography. (Cover photo shows a sludge digester.) 313/532-2600. American Concrete Institute, Detroit. **CIRCLE 237**



Occupancy-sensor guide

A new catalog includes a primer on "sensor basics," typical installations for infrared and ultrasonic types, and creating networks of controlled lighting and hvac equipment. Calls out products for each specific use. 512/450-1100. Mytech Corp., Austin, Tex. **CIRCLE 238**

Wrought-metal benches

A McKinnon and Harris catalog illustrates landscape furnishings—benches, chairs, and tables—of contemporary design. Benches are wrought iron and [illegible] American [illegible] a powder-coat finish; many benches have hidden bolt holes that permit unobtrusive anchoring for security in public spaces. 804/358-2385. McKinnon and Harris, Inc., Richmond, Va. **CIRCLE 239**

Commercial ceilings

All of this maker's ceiling styles, including Acoustone, Auratone, Eclipse, and Orion, are shown in an architectural catalog that samples standard-color options, rates acoustical performance, and gives fire-test data. Request publication SA-905. 800/950-3839. USG Interiors, Inc., Chicago. **CIRCLE 240**

Paints from Holland

A 50-page brochure describes the long-term esthetic and performance benefits attributable to better-quality paints. Made by the Hermann A. Schreuder Co. (HASCO), these paints, while expensive, are said to offer excellent depth of color, bright and durable enamels, suede-like mattes, and a significantly longer anticipated useful life. Specific paint formulations and thinners are suggested for all interior and exterior surfaces; application instructions are given for each. 800/332-1556. Fine Paints of Europe, Woodstock, Vt. **CIRCLE 241**

Stamped-metal ceilings

Traditions panels have the nostalgic appeal of 19th century metal ceilings, but are available as lay-in ceiling panels for suspended grids. Finish options include bare steel, any color of baked enamel, reflective metal, and anodized aluminum. Nail-up panels are also available, along with accessories such as cone-head nails and matching cornice. 800/560-5758. Interfinish Division, Chicago Metallic Corp., Bridgeview, Ill. **CIRCLE 242**

Good wood

A short brochure offers facts about the various uses of wood in building construction today, discussing reforestation, efficient use of natural resources, and recycling potential of timber products. It mentions the structural and esthetic advantages of different solid-sawn and engineered wood products. Fax 503/224-3934. Wood Works, Portland, Ore. **CIRCLE 243**

Hardware guide

A comprehensive catalog covers "Total Openings Solutions" from Essex Industries, which now integrates product from Curries, Graham, McKinney, and Sargent. Includes hardware, door systems, and security fittings for healthcare facilities, school and university applications, and commercial office buildings. Dimensions, ratings, and finish options given. 800/ESSEX4U. Essex Industries, Inc., New Haven, Conn. **CIRCLE 244**

Structural-wood design

Correct use of APA-rated panels is covered in a design/construction manual. A reference for users and specifiers, it has current information on panel grades; floor-, wall-, and roof-systems; fire-rated panel systems; diaphragms and shear walls; and finishing methods. Single copies are $4. More data at apawood.org (Web page); 206/565-6600 (phone). APA—The Engineered Wood Assn., Tacoma, Wash. **CIRCLE 245**

Home-design trends

A quarterly, written for the homeowner to encourage expression of a personal style in residential spaces and materials, *Envision* presents ideas about mixes of colors, patterns, and textures. Illustrations demonstrate the ability of Formica laminates and solid surfaces to work with natural materials such as granite and hardwood. 800/FORMICA. Formica Corp., Cincinnati. **CIRCLE 246**

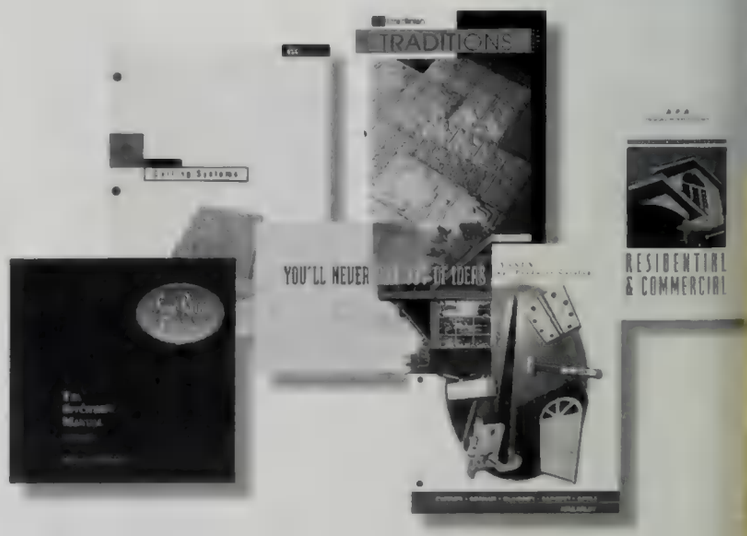
Architectural glass

A design and technical guide explains the performance characteristics of Azurlite glass, with comments from architects who have specified the glass. Combining a high visible-light transmittance (71 percent) with a low shading coefficient (0.60), Azurlite yields a Lighting and Cooling Selectivity (LCS) index of 1.18. Call 800/377-5267. PPG Industries, Glass, Pittsburgh. **CIRCLE 247**

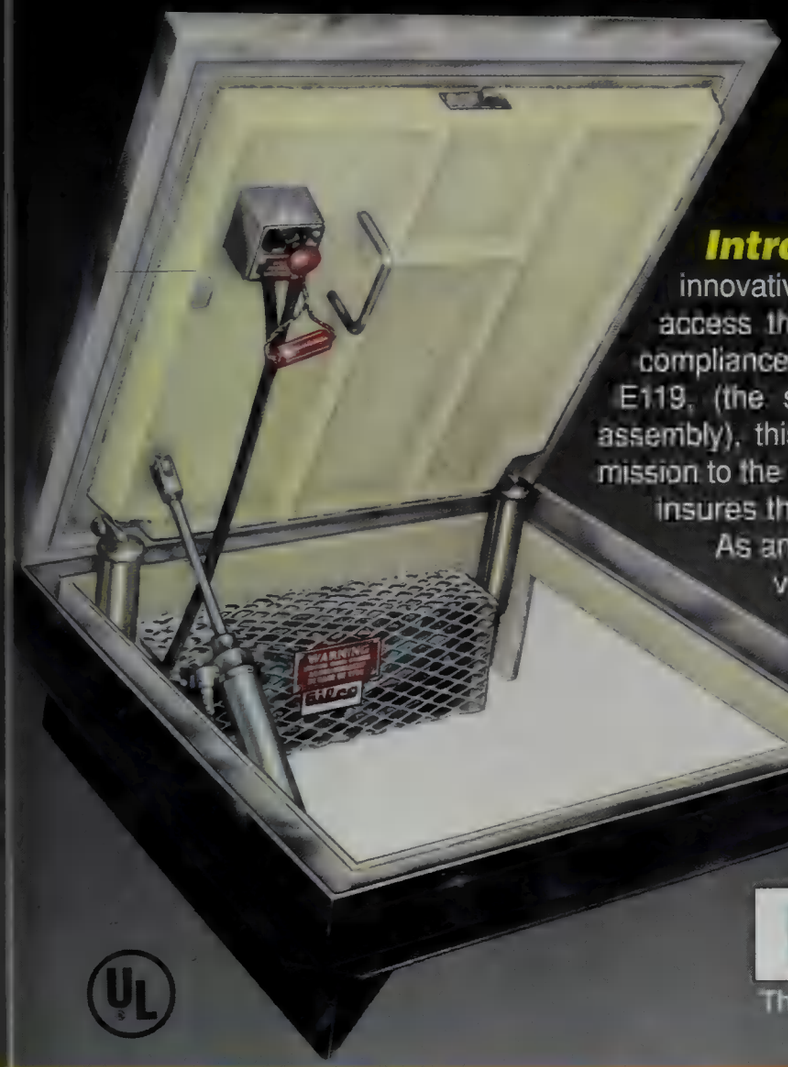


Masonry design

Prepared for concrete masonry and precast concrete applications, a *Lintel Design Manual* contains chapters on material properties, loading conditions, and design methods. Lintel-design tables list moment- and shear-capacities. Publication TR 91A is $12 per copy. 703/713-1900. National Concrete Masonry Assn., Herndon, Va. **CIRCLE 248** →



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Web-server updates

The most recent issue of InterVue magazine discusses the benefits of Web technology to engineering and design firms. Subscriptions to this quarterly on multi-platform computing are free: 800/345-4856; intergraph.com (Web page). Intergraph Corp., Huntsville, Ala. **CIRCLE 251**

Fabric structures

A color portfolio illustrates the flexibility and variety of scale possible with tensioned-membrane and air-supported structures. Projects range from bandshells to amphitheatres to airports; step-by-step photos show erection methods. www.birdair.com (Web page); 800/622-2246. Birdair, Inc., Amherst, N.Y. **CIRCLE 252**

Stone-look finishes

Color-selector fan deck gives the look and feel of Aurora Stone, a new Senergy finish for use on EIFS, cementitious stucco, or other masonry surfaces, indoors as well as out. Spray-applied, textured Aurora replicates the appearance of granite and marble in 12 blended colorways. Fax requests: 401/941-7480. Senergy Div., Cranston, R.I. **CIRCLE 253**

Exterior wood products

Cabot's newest brochure describes the appeal of wood as an exterior material, and illustrates the different effects of clear, semi-transparent, semi-solid, and solid stain on the appearance and grain of different wood species. Other products covered include bleaching oil that speeds up and evens out nature's own weathering process, and O.V.T. acrylic coatings that cover and color like paint. 800/US-STAIN. Samuel Cabot, Inc., Newburyport, Mass. **CIRCLE 254**

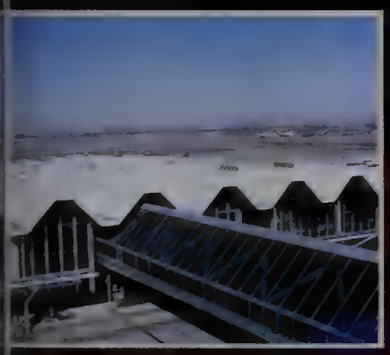


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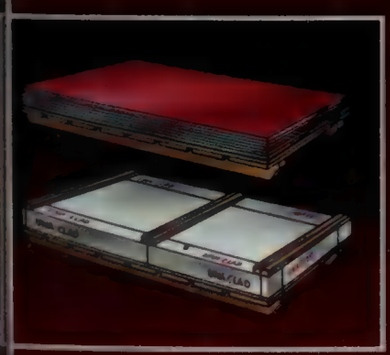
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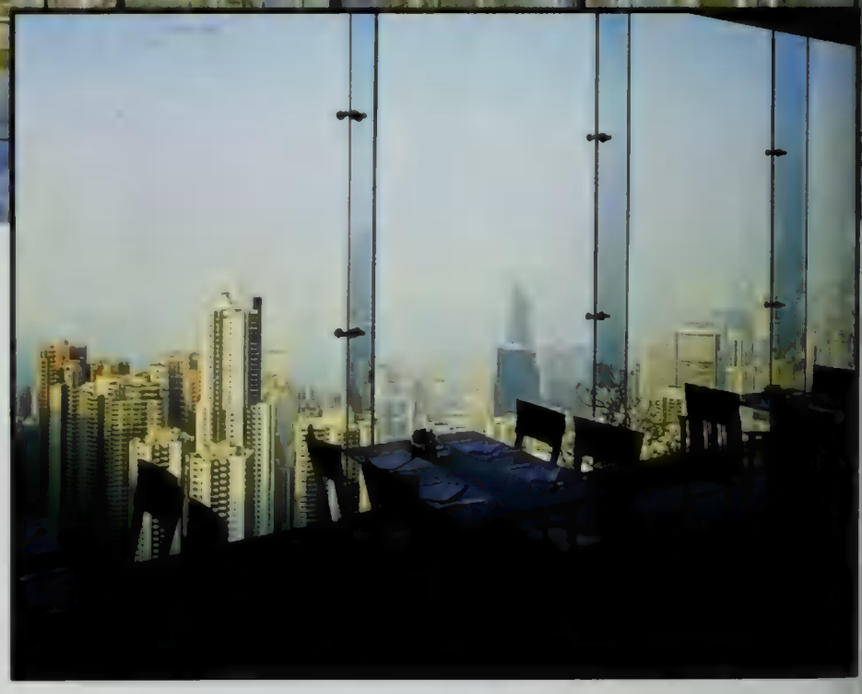
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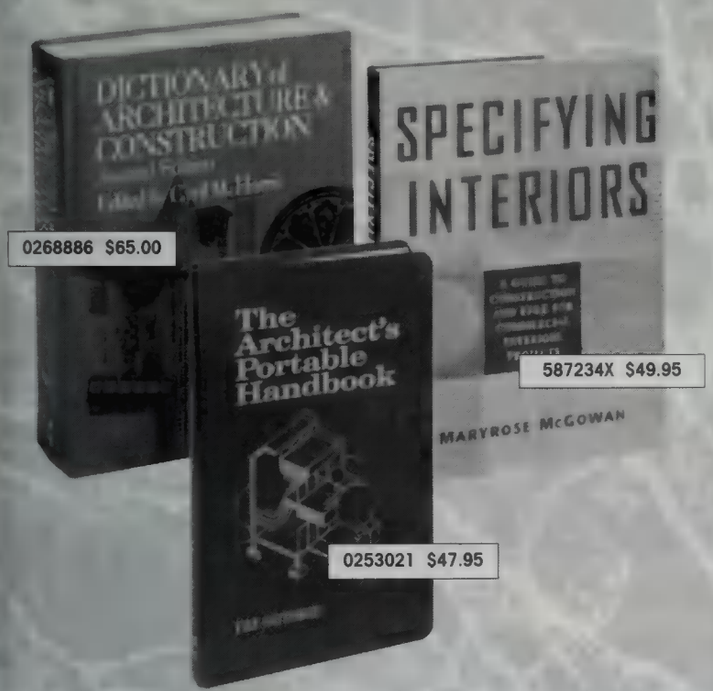
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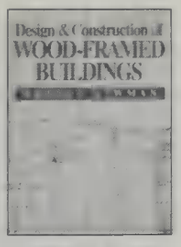
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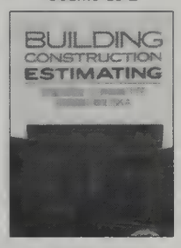
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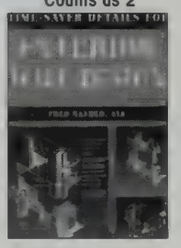
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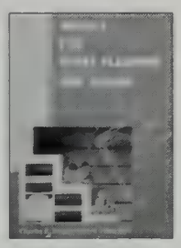
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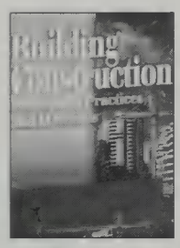
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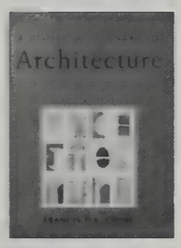
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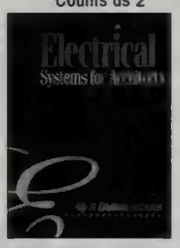
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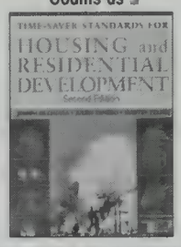
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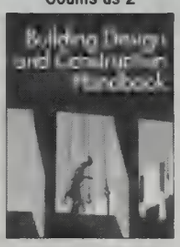
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CIRCLE 100 ON INQUIRY CARD

(continued from page 115) owned firm, and the candidates who come through my door are not typically women or minorities. In order for me to increase the number of people in my firm who are diverse, I really have to go out and seek them."

One of the ways that Kwan Henmi has increased the number of women and minorities in the firm is to bring them in at the intern level. Others have their own methods. BOORA sponsors a scholarship for minority students at the University of Oregon. Len Peterson of OWP&P serves on the board of the Newhouse Foundation, which supports minority youth who aspire to architectural careers. Peterson actively seeks employment opportunities for these youth. The Hillier Group maintains very close ties to Howard University, thereby attracting African Americans to the firm.

It is notable that many of the firms stated that their objective is to find and hire the most talented people possible, regardless of sex or race. Kwan says, "That may be true. But you have to throw your commitment in on top of that. You look for the best talent, but you have to aggressively seek the talent that represents diversity or you're not going to get it. Everybody brings something to the table whether they're black or white or Asian. And the more that you have different viewpoints and backgrounds, the richer the environment is at the office."

Over and over, these firms say that they look for leadership and managerial skills even in entry-level job candidates, with the thought that these very people may well lead their firms in the future. As more female and minority students enter the work force, these numbers are sure to improve if firm managers are truly committed to making their firms diverse and cultivating this young talent.

FEW FIRMS DO LEADERSHIP AND OWNERSHIP TRANSITION WELL. THEY START TOO LATE.

Leadership Transition. There were just a few firms among respondents to the survey which said they are not planning any kind of leadership transition. Those which are looking ahead draw a great distinction between leadership transition and ownership transition. Principals begin identifying and training their potential successors as many as ten years before any significant amount of stock changes hands.

OWP&P began planning for these transitions in 1986. "We did some benchmarking," says Len Peterson, "and found that few firms do leadership and ownership transition well. They start too late, and the stock is often too expensive to buy." In 1986, OWP&P recapitalized its firm, and in 1989 an ESOP was introduced. These steps established a method for transferring ownership of the firm, and made the stock more affordable. At the same time, steps for transferring leadership were established. Senior principals for design and development were identified, and, entered a mentorship program under partners who planned to retire eventually. A junior partner was sent to Northwestern University's Graduate School of Business to prepare him to assume the position of chief financial officer of the firm. He then headed a task force to establish a timeline for the retirement of the older partners, who will reduce their holdings by 50 percent intially, then by another 25 percent, with a concurrent reduction in responsibility. Principals who wish to continue to keep working with the firm can retain as little as one percent of their stock, and still be involved on a limited basis. ■



Len Peterson notes that transition of ownership and management is always on-going, and that as one generation retires and is succeeded by a new one, planning for the next transition must begin. "For each principal's position, you should always start with six or seven people you could nurture into your position. And these are gradually narrowed down to two people, and finally one." When younger partners have joined OWP&P's board, it is the custom for the partners who are close to retirement to abstain from voting on decisions that will have a long-term influence on the firm. "We believe it is very important for these partners to have complete control over the decisions they're going to have to live by in the future," says Peterson.

This article has only scratched the surface as far as innovative management practices are concerned, and there was no way all of the good ideas that were submitted to us could be shared. Obviously there are changes and transitions ahead for all architects, and we invite our readers to share with us and other readers the management methods they are using to make their practices more successful and more enjoyable. Write Associate Editor Cliff Pearson, fax, 212/512-4256, or E-mail, pearsonc@mcgraw-hill.com ■

METHODOLOGY



To select firms to be included in this story, we:

1. **Spoke with** top management consultants and asked what criteria they use to evaluate firms.
2. **Collected nominations of well-managed firms** from management consultants, authors, academics, and RECORD editors and correspondents.
3. **Developed a detailed questionnaire** and sent it to a select group of firms.
4. **Interviewed some firms** by telephone.
5. **Visited other firms** and spent at least a day in the offices of each one.

List of management consultants who helped with this story:

Robert Gutman (Princeton University, Princeton, N.J.)

Richard Hobbs (American Institute of Architects, Washington, D.C.)

Louis Marines (Advanced Management Institute for Architecture and Engineering, San Francisco)

Paul Nakazawa (Pearson Egan Nakazawa, Wellesley Hills, Mass. and New York City)

Peter Piven (Coxe Group, Philadelphia)

Stuart Rose (Professional Development Resources, Inc., Washington, D.C.)

Frank Stasiowski (Professional Services Management Journal, Newton, Mass.)

Mark Zweig (Zweig White & Associates, Natick, Mass.)

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Calendar

Through January 12
Milwaukee Art Museum
"The Architecture of Santiago Calatrava" at the Milwaukee Art Museum (MAM) includes models, drawings, and photos of the Spanish-born architect and engineer's major works. Calatrava's first completed project in the U.S., scheduled to open in 2000, is an expansion of MAM. Call 414/224-3240.

Through January 19
National Building Museum, Washington, D.C.
"Three Buildings by Frank Lloyd Wright: American Spirit Alive in Japan" traces the history of the only three non-U.S. buildings Wright designed and built: the Imperial Hotel, Yamamura House, and Jiyu Gakuen Myonichikan School. Call 202/272-2448 or fax 202/272-2564.

Through January 20
Michael C. Carlos Museum, Atlanta
"Steven Brooke: Views of Rome," 200 images that follow in the footsteps of traditional painters who recorded the city in earlier times. Call 404/727-2251.

January 21–24
Las Vegas Convention Center
The Concrete Construction convention will show the latest techniques and developments in the trade. Call 708/543-0870 or fax 708/543-3112.

January 22–26
Houston Convention Center
The National Association of Home Builders Convention will include an AIA Housing Professional Interest Area (PIA) slide presentation of the top 25 architect-designed and developer-built residential units, and three sessions of plan-review workshops targeted to help builders work with architects. Call 800/368-5242 for registration and information.

Through February 16
Metropolitan Museum of Art, New York City
The career of Charles Rennie Mackintosh, with 250 works that include photos and drawings of his buildings, furniture, textiles, and the reassembled Ladies' Luncheon Room from Miss Cranston's Ingram Street Tea Rooms. Call 212/535-7710.

Through February 23
National Building Museum, Washington, D.C.
"An American Embassy in Berlin" examines the recent competition for the American Embassy in the German capital. Models and drawings by all semi-finalists as well as the winner, Moore Ruble Yudell and Gruen Associates. Call 202/272-2448 or fax 202/272-2564.

March 6–8
Westin Tabor Center, Denver
Six PIAs (Professional Interest Areas) and the AIA risk-management committee are cosponsoring a conference, "The Client Connection." It is endorsed by the AIA Denver, AIA Colorado, and the AIA Denver Design-build Committee. The conference will focus on ways architects can better serve their clients with over 30 seminars, workshops, and programs on design-build, construction and risk management, alternative futures in the profession, and information technology and communications. For information, call 202/626-7482.

March 19–21
Los Angeles Design Center
WestWeek 97 will celebrate European furniture and interior design with major sponsors and keynote speakers from Italy, France, and Spain. Call Ann Videriksen at 310/657-0800 or fax 310/652-8576 for information.

Competitions

Registration to design the **Oklahoma City Memorial** is due by February 10. The new structure will stand on the site of the worst terrorist attack on U.S. soil—the bombing of the Alfred P. Murrah Federal Building on April 19, 1995. Also included are a visitor center, which may be housed in an adjacent existing building. To register, send a letter requesting competition materials and a check for $25 to International Design Competition, Oklahoma City Memorial Foundation, 420 North Robinson Avenue, Oklahoma City, Oklahoma 73102. For information call 405/748-748-0515 or 800/491-3822.

Entries for the **1997 DuPont Benedictus Awards** for Innovation in Architectural Laminated Glass are due March 3. The competition is sponsored by DuPont, the AIA, and the Association of Collegiate Schools of Architecture, and is supported by the International Union of Architects. This year's jury is comprised of Hugh Newell Jacobson, FAIA; Patricia Patkau, RAIC; and Christian de Portzamparc. Winners from around the world who demonstrate "significant" uses of laminated glass will be announced at the AIA Convention in New Orleans, May 16-18. For information, write Joanna Hanes-Lahr, 1100 New York Avenue, N.W., Washington, D.C. 20005; call 202/393-5247; or E-mail to haneslahr@mcimail.com.

The Village of Plainfield, Illinois together with Plainfield Partners Commercial, Ltd., and the township Park District are holding a one-stage competition for the design of a 300-acre **Plainfield Town Center** to be located directly across the Du Page River from the historic downtown. Registration costs $90 and closes March 30. Entries are due May 1. Prizes are $10,000, first, $5,000, second, and $2,500, third. To register, send check or money order to Plainfield Design Competition, Village of Plainfield, 32145 West Lincoln Highway, Plainfield, Illinois 60544. For information, call 815/436-7093.

Entries are due on April 1 in the one-stage International Design Competition for the **Development of David's Island** located in Long Island Sound. The sponsor is the College of New Rochelle. Registration before January 15 costs $35, and $50 thereafter. Jurors include Diana Agrest, Diana Balmori, Deborah Dietsch, Laurie Hawkinson, Michael Manfredi, and Bradford Perkins. Prizes totaling $5,000 will be distributed among the winners, whose entries will be exhibited at the New Rochelle Castle Gallery. For a brief, call 914/654-5423.

Reviews

Buckyworks: Buckminster Fuller's Ideas for Today *by J. Baldwin. New York: Wiley, 1996, 243 pages, $30.*

Frank Lloyd Wright: Designs for an American Landscape 1922-1932 *edited by David G. De Long. New York: Harry N. Abrams, 1996, 207 pages, $45.*

Josef Frank, Architect and Designer, An Alternative Vision of the Modern Home *edited by Nina Stritzler-Levine. New Haven: Yale University Press, 1996, 311 pages, $65.*

Reviews by Wendy Moonan
Why is it that, as we approach the year 2000, three of the most interesting new books are on

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visionary thinkers born in the last century? Of the three, the least academic and most original is Buckyworks by J. Baldwin, an inventor and teacher who worked with Fuller for 31 years. Baldwin includes his own personal anecdotes and 200 historic photos and drawings in his description of Fuller's inventions and key projects, from the "4D," a 10-deck residential tower of 1928 to the three-wheeler Dymaxion car (which looks strangely like our minivan) to synergetic geometry and the geodesic dome.

Fuller's ideas were more practical than he knew. Baldwin cites many examples, including the amazing North Face geodesic tent, a 9-pound, 48-sq-ft tent used on expeditions to remote places with brutal weather. Neither biography nor scholarly treatise, this book is valuable because it describes both Fuller's original building techniques and innovative use of such materials as aluminum, Mylar, fiberglass, tin, and waterproof cardboard.

A new book on five of Frank Lloyd Wright's unrealized projects from the 1920s is equally revealing. It was commissioned for an exhibition at the Canadian Centre for Architecture (CCA) in Montreal this summer (it opens at the Library of Congress on November 14). When Wright returned to the United States in 1922 after years in Europe and Japan, he confronted a newly mobile society. Realizing the car would provide access to America's wilderness areas, he went looking for the patrons who would build there. In one scheme, for the desert outside of Phoenix, Wright designed a luxury resort over a ravine with 120 different types of ornamental textile block (for walls, ceiling, and floors), some of which reappear in later projects.

Another project in the book is a house for A.M. Johnson on the edge of Death Valley, which utilized corbelled concrete-block walls 1,000 feet long—an idea Wright later adapted for Taliesin West. One also sees here Wright's first spiral structure, the Gordon Strong Automobile Objective, a Guggenheim-like viewing platform for drivers to ascend Sugarloaf Mountain, near Washington, D.C., to take advantage of the spectacular views.

Wright, who had never been to these remote parts of America before, discovered the car in 1922, explains CCA curator Nicholas Olsberg in his Introduction to the book. Wright had inventive ideas about how to place buildings in the landscape rather than let them intrude on it. For the first time, landscape was about planning and geometrics, not plants. The book's strength is to trace the architect's ideas about siting and materials.

Josef Frank, an Austrian architect born in 1885, made his mark designing furniture, textiles, and interiors in Sweden before and after World War II. Nina Stritzler-Levine's book on Frank was prepared as the catalog for an exhibit earlier this year at New York's Bard Graduate Center for Studies in the Decorative Arts, where Stritzler-Levine is director of exhibitions. Before World War I, Frank designed several spare Modernist houses not unlike those of his countryman Adolf Loos. By 1927, he had attained a prominent position in the Viennese design community and was known throughout Europe as a leading representative of the Modern movement, says Stritzler-Levine.

But Frank turned away from the Modernist esthetic. He designed housing projects for the poor and eclectic interiors for the middle class. He had a vision of the modern home that included comfort—a vision attacked by Josef Hoffmann, among others. In 1933, Frank, alarmed by the rise of Nazism, accepted an offer to work as chief designer for a interior design shop in Stockholm. He largely gave up architecture, though he did design several innovative (but unbuilt) Modern houses in the 1950s, which are included in this book. In Sweden, he created some 2,000 pieces of furniture, hundreds of textiles and decorative objects. This book, said to be the first complete examination of Frank's work in English, shows how he helped pave the way for postwar Swedish Modernism. His designs for Modern furniture, in particular, are as fresh as those of Gio Ponti, his contemporary in Italy, and will certainly be rediscovered by collectors of 1950s design as a result of this book.

Richard Horden: Light Tech: Towards a Light Architecture *edited by Werner Blaser. Basel: Birkhauser, 1995, 192 pages, $75*

One of England's up-and-coming architects, Richard Horden studied at London's Architectural Association and worked with Nicholas Grimshaw and Norman Foster before going out on his own. An experienced sailor with a fascination for airplanes, Horden is taken with the idea of creating an architecture without weight. His projects usually involve the construction techniques of yacht building and spaceflight, taking advantage of the most advanced technology and materials. He has devised easily assembled lifesaving platforms with aluminum and acrylic canvas for the beach and canopies for garden parties for Buckingham Palace. Best of all is the mobile alpine ski hut for two that is transported by heli- *(continued on page 223)*

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(Letters, continued from page 26)
As a recently graduated architecture student with a deep interest in urban design, I was repelled by my school's inability to generate productive ideas on urban problems. To offset my overly ideological education on design theory, I opted to work in a planning department of a major U.S. city. The attitude toward planning there is numbingly bureaucratic, concerned more with procedure and politics than with anything remotely related to urban design.

Part of this stems from the balkanization of our graduate-school curriculum into planners and architects. In my school, architects took no classes with planners, had no professors in common, and received little credit for taking [planning] courses. And planning graduates are better equipped to collect data and produce tables of information devoid of visual content. The net result? A city where no urban design on the level Mr. Campbell discusses has been produced in 20 years.

As government retrenches even further, I can only think that the gap between planning and architecture is bound to grow even wider. As someone who is trying to bridge the gap, I have found little support. I'm ready to throw in the towel and retreat back into academia to study the bolder efforts occurring elsewhere. Before we address our inability to design urban projects, we must address our inability to produce urban designers and governments unwilling to accept design as a responsibility.
–Name withheld by request

In response to "The Boldness Gap," I have to ask "Have we lost interest? Perhaps we have, but I contend that the problem facing architecture in this country is whether or not we, as Americans, are truly capable of appreciating the built environment.

We need to examine the [illegible] and interpret [illegible] basic [illegible] based on the thought that lower needs such as survival and safety must be met before human motivation can shift toward the higher esthetic needs.

As a relatively young society, America is still struggling with homelessness and welfare issues (basic survival and safety) thereby restricting our ability to reach these upper-level needs. On a recent trip to Europe, a colleague's wife commented that the older established European societies are "concerned with filling their lives with artful things." America is not able to focus on beauty or order without first worrying about issues like job security or adequate education.

I am not using this model as a reason to submit to "The Boldness Gap," but as a challenge to designers to aid America in understanding "that architecture is important to people," as Campbell says.
–Scott Hedglin
Architecture student
North Dakota State University
Fargo, North Dakota

After practicing architecture in Germany, England, and the U.S. for 21 years, I agree with Robert Campbell's observations on architectural design in the U.S. Furthermore, the lack of boldness can be traced to other design areas such as cars, appliances, and, most notably, furniture. The absence of progressive, strong, and bold design in so many areas (notwithstanding the exceptions) must have some deeper causes. I think that the article should have used some background research. I'm afraid each society gets the architecture and design it deserves and, in fact, needs. Let me try a few explanations of why European or Asian design might often seem bolder:

Public poverty. In our current tax-cutting, anti-government mode, there is simply no money for grand public projects. Thus, public buildings lack civic pride and look cheap and dismal. As long as our economic emphasis is on private consumption, this is unlikely to change despite some laudable efforts by the AIA to promote quality-based architect selection over fee-based competition for public projects.

Anonymous architecture. Most houses, but also retail centers and office spaces, are built by speculators. Lacking input from the actual users with their specific interests and needs, these projects tend to cater to the smallest common denominator.

Lifestyle. Families are more pressed for time than ever, often containing two breadwinners who have long commutes and drive their children to many activities and 24-hour shopping. They watch 24-hour television and use the Internet. Project-design phases get shorter for architects too. There is no time for careful deliberation. Our mobility is at an all-time high. We move from community to community. In the process, we become more disjointed while our older cities disintegrate. All this doesn't foster good design, nor appreciation, nor even interest. There is not only a lack of debate on design, there is general apathy. Less than 50-percent voter turnout in a national election is a particular American record; European turnouts are usually in the 80 percent range.

Unfortunately, I don't think we can learn from Europe or Japan. Their social development is simply lagging behind ours (for better or worse), but generally shows trends similar to ours: more private consumption, more individual isolation, less homogeneity, and less interest in public affairs.

I believe it is our task to look forward rather than back. We have to demonstrate that the public realm is as important as the individual and that design can also flourish in a multicultural society—not by power of presidential fiat (as in France), but by virtue of the rationale that good architecture and design actually serve people better.

Design and architecture understood as a social function will not bring back the days of the architect as benevolent design dictator (the Howard Roark syndrome) nor will it support architecture for art's sake. We might, however, rediscover that architecture understood as a service and approached as a holistic and comprehensive craft will make our society richer and more sustainable, and result in solutions less timid than the ones Robert Campbell is deploring.
–Klaus Philipsen, AIA
Baltimore

I just don't get it. Dallas wants to project an image of civic pride as a global center of business and culture—a world leader in entrepreneurial opportunity and quality of life. But wait a minute. Doesn't architecture express corporate and civic leaders' dreams of our city? Aren't concrete expressions of abstract goals a message to the world about who we are?

Rising like a phoenix, a dozen or so building cranes (thought to be extinct) have been spotted near LBJ and Central as a bundle of new Texas Instruments structures emerges. And what is the building style of Dallas's global leader in the high-tech electronics business? If you're expecting state-of-the-art design, or award-winning architecture, don't hold your breath.

Unfortunately, with the simple addition of a chain-link fence and some rolls of barbed wire, the new campus could double as a penitentiary. With increasing attention to our environment, it's disappointing to see a community leader add visual pollution to the place we live. If Dallas truly wants to compete with Singapore or Hong Kong or San Jose, we need to improve the quality of our architectural investments.
–Charles D. Clift
Dallas

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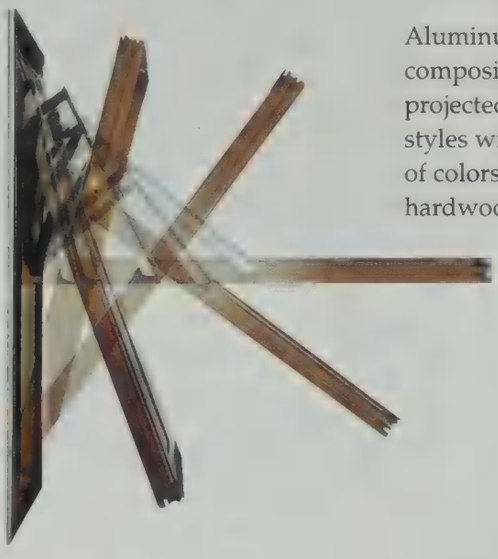


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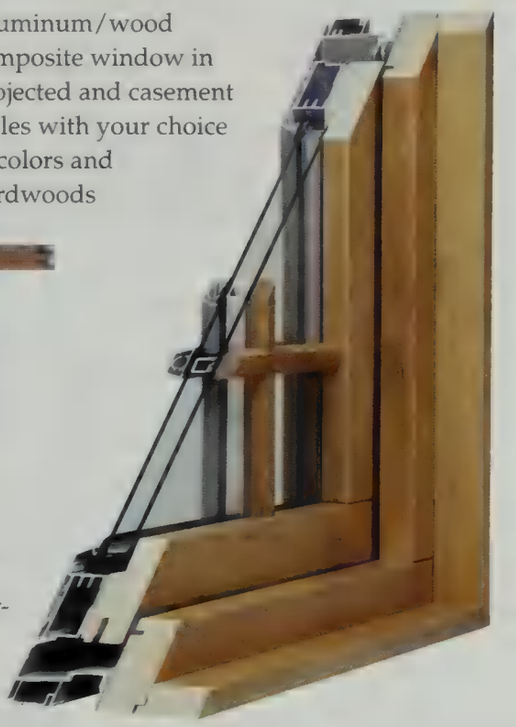
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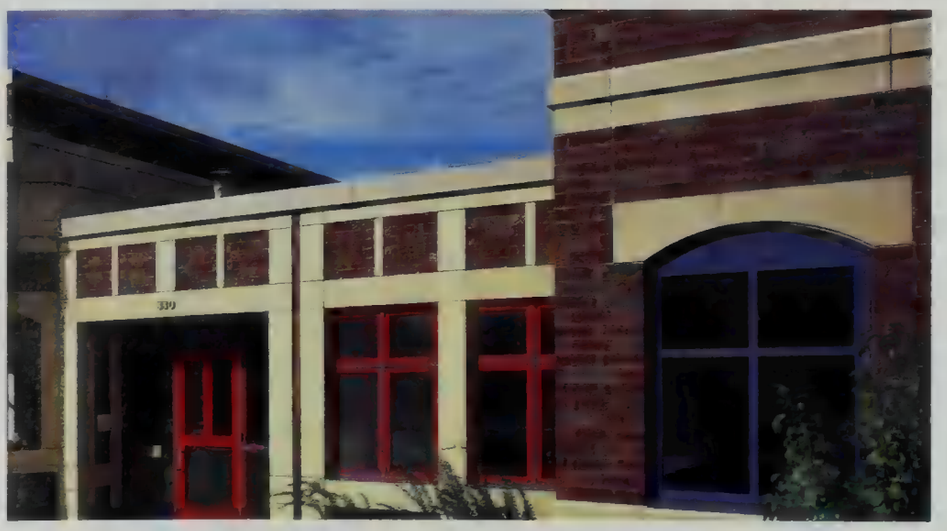


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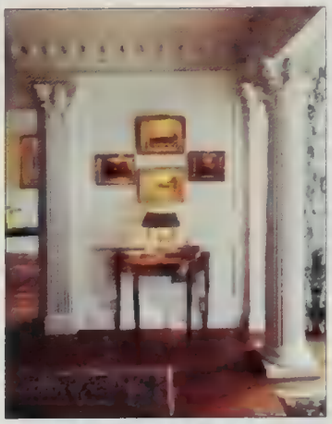
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The Total Door® System



Is an architect-designed integrated door assembly. It includes prefinished door panels and all hardware. Fire rated pairs do not require coordinators, vertical rods, astragals, flush bolts or floor strikes. Will retrofit to any frame. Meets all codes and ADA. Wood and metal faces available to 3 hours. Lifetime limited warranty on locks and panics. Openings, 40 West Howard, Pontiac, MI, 48342. Tel. 1-800-852-6660.

Openings

CIRCLE 113 ON INQUIRY CARD

Concrete Waterproofing by Crystallization

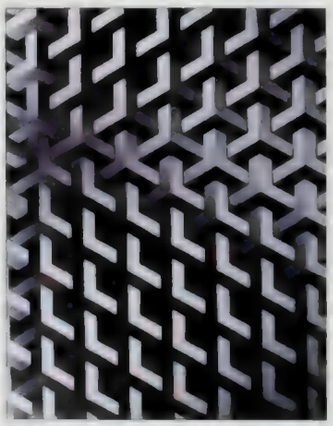


Applied as a slurry coating Xypex is a chemical treatment that waterproofs by penetrating the concrete with a crystalline formation that "plugs" the pores of the structure preventing water seepage. Xypex is ideal for use on the "inside" of wet underground structures.

Xypex Chemical Co.

CIRCLE 114 ON INQUIRY CARD

Sheet Metal Decoration



INTRODUCING THE NEW ALPHA COLLECTION FOR 1995. With 24 patterns to choose from, ranging from the most basic vandal resistant **TEXTURES** to innovative **STANDARDS** and our new **ULTRA Series** (sheets). Patterns come in standard sheet sizes with border-to-border applications using distinctive finishes on a variety of metal surfaces for elevator cabs and interiors, wall panels, columns, and trim. Starting at just $48 per sheet. It's the fastest, most affordable way to add beauty and value to any commercial or residential project.

Trespa® Solid Composite Panels Three Product Lines



Toplab® chemically resistant laboratory grade panels for benchtops, work surfaces, shelves. Athlon® sanitary grades for toilet partitions, lockers, vanities. Meteon® UV colorfast grade for exterior cladding, soffits, fascias, balcony panels. All grades are durable, available in colors, and proven performers in these applications. 1-800-4-TRESPA.

Hoechst Celanese Corp.

CIRCLE 116 ON INQUIRY CARD

12 New Products Featured in 1997 Catalog



12 new products are introduced in Strong-Tie's '97 catalog, Wood Construction Connectors. A necessary reference for structural engineers, building officials, and architects, it includes updated specs, load charts, application drawings, & building code acceptance - plus info on holdown anchorage design, & available custom hanger options. ISO9001 Reg. For 1997 catalog (C-97), write POB 10789, Pleasanton, CA 94588.

Simpson Strong-Tie

CIRCLE 117 ON INQUIRY CARD

PG BELL



Porcelain Enamel panels offer designers a solution that has an almost unlimited choice of color; a permanence that will not fade when attacked by the weather, or be marred by vandals.
PG Bell is North America largest manufacturer of heavy gauge porcelain enamel panels, supplying both wall systems and signage to the architectural market. We offer design assistance, engineering, manufactured panels, and installation services. Our markets are not limited to North America - but are worldwide.

PG Bell

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Accessible Lavatory Insulation

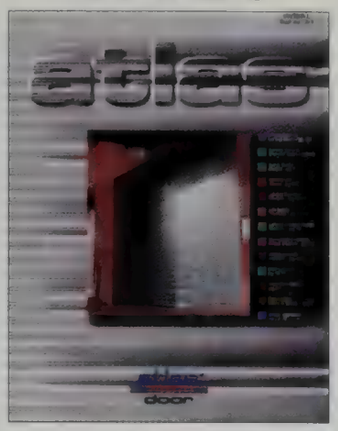


A full color catalog will explain the different Handy-Shield safety covers offered for the new or retrofit projects that need to comply with the American Disabilities Act. The specific use sample, sample specifications, drawings and color choice are all summarized in this easy to understand catalog. 800-475-8629.

Plumberex

CIRCLE 119 ON INQUIRY CARD

1997 Atlas™ Product Catalog



Atlas Door's new, 24-page product catalog has been completely redesigned and is available for distribution. All products are color and icon coded for easy reference including: rolling service doors, thermal doors, fire & life safety doors, counter shutters, grilles, and motor operators. General and specific design considerations are addressed including ASCE-7 wind load compliance. Contact Tim Rudd @ 800-282-2260, ext.

Atlas Door Corp.

CIRCLE 120 ON INQUIRY CARD

New Fireplace Tested as a Wall Furnace



Heat-N-Glo Fireplace Products has taken its direct-vent technology and incorporated it into a new high performance fireplace. Model 6000 Supreme is a high efficiency fireplace (thermal efficiency up to 74%) and has a AFUE (Annual Fuel Utilization Efficiency) rating of 63%. Also, the 6000 Supreme is standard with a variable regulator to adjust the flame and BTU input with the turn of a dial. Heat-N-Glo, 6665 West Hwy 13, Savage, MN 55378, 1-800-669-HEAT.

Heat-N-Glo

CIRCLE 121 ON INQUIRY CARD

Advanced Relational Technology, Inc.



Proves that top quality architectural software can be easy to learn. Straight out of the box, Chief simplifies the process of creating full working drawings. Over 300,000 people worldwide prefer ART's architectural software with its full 3-D capabilities. Advanced Relational Technology, Inc. 3731 N. Ramsey Rd, Suite 150, Coeur d'Alene, ID 83814. Phone: (800) 482-4433, Fax (208) 664-1316 E-mail: artchief@chiefarch.com -WWW: www.chiefarch.com

ART

CIRCLE 122 ON INQUIRY CARD

Raymond Enkeboll Designs© 1996

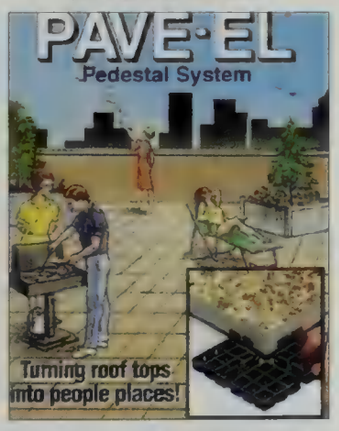


Crafts an extensive array of Architectural elements carved in solid woods. 104 pg. catalog, shows a selection of capitals, corbels, moldings, onlays, panels etc. Stocked in Maple and Red Oak, available for immediate delivery. Spiral Bound catalog $20, Special binder version $30. Visa & MC welcome. Brochure available. Raymond Enkeboll Designs 16506 Avalon Blvd. AR17, Carson, CA 90746 T: 532-1400 F: (310) 532-2042

Raymond Enkeboll

CIRCLE 123 ON INQUIRY CARD

Turn your roof tops into people places!



New literature shows a better way to transform a roof into a patio, terrace, balcony, walkway, plaza podium, promenade, or just plain roof deck, using the Pave-E1 Pedestal System. Designed to elevate, level, and space paver stones for drainage in any weather. **Pave-E1 reliably protects roof, paver-stone, membrane and insulation.**

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Ellicott Station Box 119
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CIRCLE 124 ON INQUIRY CARD

Grass Paving at the Orange Bowl



The Orange Bowl Stadium in Miami has an improved parking lot of grass with Grasspave2. 100% grass finished parking bays are compatible with asphalt aisles. 92% root area is best for grass health, maximum porosity and improved water quality. New 100 m2 rolls (1076 sf) make installation fast and easy. Landscape Architects assist with design, call 1-800-233-1510, fax 303-373-1223.

Invisible Structures, Inc.

CIRCLE 125 ON INQUIRY CARD

ADA Compliance Signage



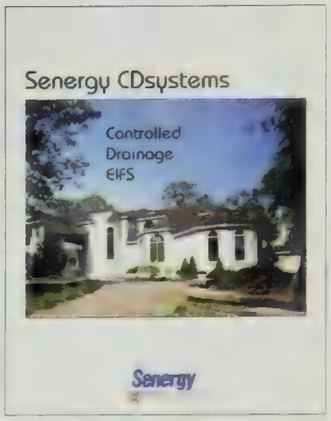
Innerface makes it easier for you to meet the Americans With Disabilities Act (ADA) signage standards, Innerface offers (1) A variety of compliance signage, (2) National distribution (3) Solid 25 year history and (4) Economical, attractive, & highly functional interior and exterior signage. Innerface also offers a complete line of interior signage. For free literature, Please call (800) 445-4796.

Innerface

CIRCLE 126 ON INQUIRY CARD

Fax: 212-512-2074

Senerflex CDsystem and QR-CDsystem



Senerflex CDsystem and QR-CDsystem are two new exterior insulation and finish systems from the Senergy Division of Harris Specialty Chemicals, Inc. CDsystems provide a sure means for controlling drainage of incidental moisture that may enter the wall. CDsystems offer a wide color selection, variety of textures, interesting aesthetic options, reduced energy costs, and low maintenance.

Senergy

CIRCLE 127 ON INQUIRY CARD

Truebro, Inc. Basin-Guard™ Undersink Enclosure



The Basin-Guard™ undersink enclosure attractively conceals unsightly plumbing and mechanical connections while maintaining knee and foot clearances mandated by A.D.A. It can be installed under kitchen sinks or restroom lavatories where countertops and sidewalks are present. The Basin-Guard™ is offered in 36" and 42" widths in white or beige and is easily trimmed down with common tools.

Truebro, Inc.

CIRCLE 128 ON INQUIRY CARD

New Casment Window from H Window



Features an aluminum exterior, wood interior & the ability to rotate 180° for easy cleaning. Avail. with total choice of exterior colors, interior finishes, & wood species. Casements are inherently weak, due to the lower hinge & handle mechanism supporting all the window weight. The patented hinge hangs the majority of weight from the top hinge guide, allowing for larger windows. 1324 East Oakwood Dr., Monticello, MN 55362.

H-Window

CIRCLE 129 ON INQUIRY CARD

Jacuzzi Whirpool Bath

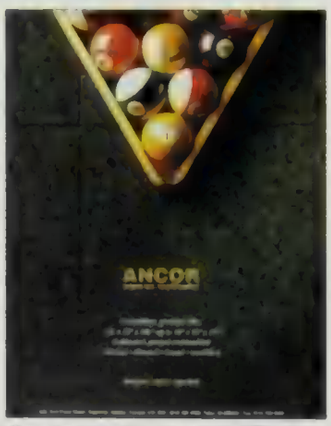


Jacuzzi Whirlpool Bath - presents The 1997 International Designer Collection of whirlpool baths, faucetry and The J-Dream™ Family of shower systems. This full-color catalog features beautifully styled products, integrating the most innovative luxury features. For more information please call 1-800-678-6889. Catalog free of charge.

Jacuzzi

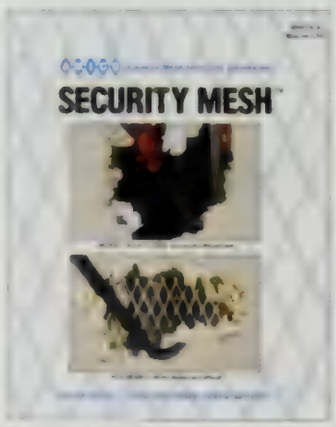
CIRCLE 130 ON INQUIRY CARD

Ancor Granite Tile



Ancor produces over fifty No. American and imported granites in a full range of colors and finishes for residential, commercial and institutional use. Standard format is 12 x 12 x 3/8"; other sizes up to 18 x 18 x 1/2" available. Honed finish tile is particularly suitable for high traffic commercial areas. 439 Port Royal West, Montreal, Quebec, H3L 2C3, Canada.

Security Mesh

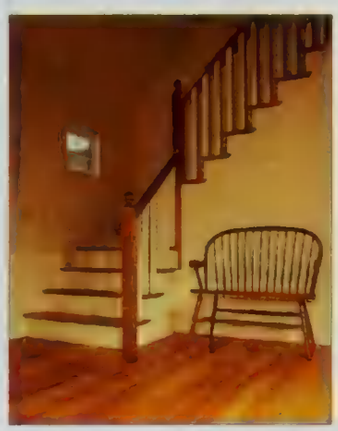


Security Mesh sheets are steel mesh panels used as a penetration resistance shield behind drywall finishes. These sheets are to be attached to metal studs and track or wood supports designed for use in walls. **Basic Use**: Prisons, government offices, strip malls, record storage rooms, computer rooms, courthouses, museums, mini warehouses, apartments, condominiums, pharmacies, art galleries, mail rooms, airport security, banks, hospitals, police stations and general office security.

Amico

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Reclaimed, Remilled, Remarkable



Vintage Lumber Co., Inc. has been manufacturing exceptional antique T&G plank flooring since 1973. Our extensive selection, consistent quality, on time delivery, and technical expertise is unequaled in the industry. For more info call 800-499-7859 or fax 301-845-6475. P.O. Box 104, Woodsboro, MD 21798.

Vintage Lumber

CIRCLE 133 ON INQUIRY CARD

Decorative Grilles



Unusual visual effects emerge when our grilles are designed for area effects. Versatility is the theme. R&G offers architects and interior designers many ways to express the changing forms of metal with the integrity of R&G's architectural grilles. Custom or standard finishes are available plus any grille can be made in matching color to blend with your decor. 202 Norman Ave., Bklyn, NY 11222. 800-521-4895. Fax: 718-349-2611.

Register & Grille Mfg., Co.

CIRCLE 134 ON INQUIRY CARD

Peerless Jumbo® Mounts



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Peerless Industries

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Over One Million Locks in Use Worldwide!



We pioneered mechanical pushbutton access controls & cont. to be the world leader. Our locks help secure The Pentagon, U.S. & Canadian embassies, McDonalds , plus major universities, banks, & airports. Most anything secured by a key can have the security & convenience of a pushbutton lock. Unican/Simplex Access 2941 Indiana Ave.,Winston Salem, NC 27105 T. 910-725-1331F. 910-725-3269.

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Worthington Group



Research and development has allowed Worthington Group to fill builders' needs with leading products in each category. Products are statically chosen for endurance, precision, ease of installation and price. Columns, Balustrading, Mantels, Moul -ding, Turnposts, Pediments, Medallions and more. Call for our catalog. Job site delivery and technical support a phone call away. Call 1-800-872-1608.

Worthington Group

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Conwed Naturalines Wood Wall & Ceiling Panels

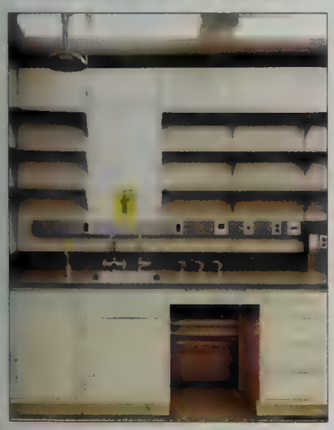


Conwed's NaturaLines custom wood wall and ceiling products enhance any design with the warmth and beauty of natural wood. Utilizing expert craftsmanship, linear, louver, cellular, and coffer styles are available as design solutions for schools, medical centers, offices, restaurants and banks. Conwed Designscape, 1205 Worden Avenue E, Ladysmith, WI 54848, 800-932-2383. Fax 800-833-4798.

Conwed Designscape

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For labs & clean-rooms New Dowcraft TwinWall



Twin Wall is custom-designed for scientific research and hi-tech manufacturing facilities. Clean lines, durable finishes, optional filler cores permit Twin Wall to perform in categories to Class 10. Acoustical rating: STC 41 up. Self-supporting steel walls shipped ready to install. Heights up to 16 ft. Send for new brochure. Dowcraft Corporation.

Dowcraft Corporation

CIRCLE 139 ON INQUIRY CARD

Monumental Iron Works

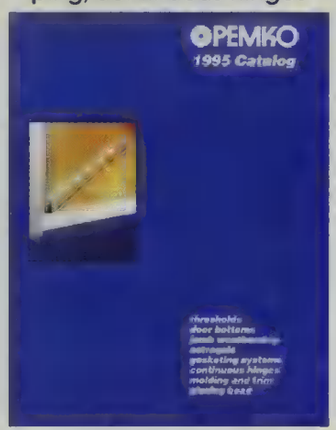


Ornamental picket fence and gate systems from Monumental Iron Works feature all galvanized steel that is powder coated in 5 standard colors. (Special colors upon request are slightly higher.) These are the most specified and the most architecturally correct ornamental picket fences and gates made today because they emulate the styles and quality of fencing built a century ago. For a free 36-page brochure. Call 410-633-6500 or Fax 1-800-239-2963, 6500 Eastern Ave., Baltimore, MD

Monumental Iron Works

CIRCLE 140 ON INQUIRY CARD

Thresholds/weatherstripping/continuous hinges



Pemko's 1995 full-line catalog illustrates many fire labeled, smoke labeled, barrier-free access, sound tested, and custom fabricated threshold and weatherstripping products. New products include: patented ADA compliant ramp thresholds, PemkoHinge™ - patented continuos geared aluminum hinges, low-closing-force reversible automatic door bottoms, nylon brush weatherstripping, and locking astragals.

Pemko

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Decorative, Thin-Film Instumescent Fireproofing



Now Certified for beams and columns for ratings up to 2 hours! A/D Firefilm permits the designer to use the appearance of exposed steel with the steel fully protected from fire. It is applied as a thin-film coating 0.4 to 3 mm (0.02 to 0.12 in.) thick. During a fire A/D Firefilm expands to form a meringue-like layer up to 100 mm thick, which insulates the steel from the fire. The topcoat is available in a wide choice of colours.

A/D Fire Protection Systems, Inc.
(416) 292-2361
1-800-263-4087

A/D Fire Protection Systems, Inc.

CIRCLE 142 ON INQUIRY CARD

Automated Vacuum Transport Systems



Waste and/or soiled Linen

- Perfect for large hospitals and similar buildings that serve thousands of people
- Improve the building environment, management, and maintenance
- Full-vacuum and gravity/vacuum tecnology
- Custom design each system to building specifications

Transvac System, Inc.

CIRCLE 143 ON INQUIRY CARD

Buckingham-Virginia Slate

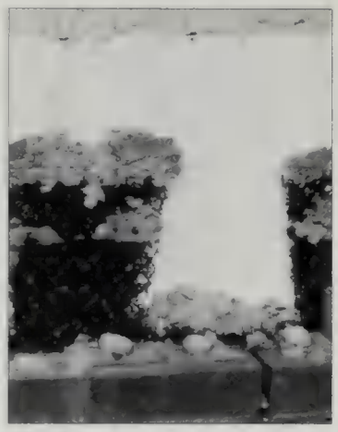


has been sheltering America for over two centuries. As a roofing material, it is prized for its high mica content, natural cleft and texture, as well as its non-fading and distinctive handmade quality. Because of it's permanence and natural beauty, it was specified by Thomas Jefferson in the 1800's and remains today the roofing choice of eminent architects. P.O. Box 8, Arvonia, VA 23004. Tel: 1-800-235-8921.

Buckingham-VA Slate

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The Mortar Net™



The Mortar Net's™ patented dove-tail cut prevents weep holes from clogging due to mortar droppings. It is available in sizes to fit a variety of cavity wall dimension. All are made from non-degradable polymers and are easy to install. The Mortar Net™ was invented by Tom Sourlis, a masonry restoration expert with more than over 25 yrs of exp restoring damaged masonry. To request a CAD disk of wall details call (800) 644-6638.

The Mortar Net™

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Award Winning Brick Sculpture



For maximum impact and appeal, crown your work with a signature art piece from Brickstone Studios. Applications of brick or cast stone sculpture are unlimited - exterior and interior murals designed to bring architectural focus to entrances, foyers, facades and imagework. Quality craftsmanship and design are distinguishing services our company guarantees. 800-449-6599.

Brickstone Studios

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Fence Systems



This new aesthetically appealing Euro-design fence system combines see-thru good looks with strength and durability of 6-gauge galvanized steel mesh. Powder-coated in a large variety of colors to suit any design & enhance the appearance & security of any property it surrounds. this fence system is virtually unclimbable, rugged, maintenance-free and easy to instal

[illegible] Fence Systems

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Wood Windows and Doors



For 75 years, Zeluck has served both architects and custom builders with architectural wood windows and doors unparalled for flexibility, quality and service. Zeluck offers a wide selection of glass and hardware, and timber from responsibly managed forests. Our triple hung, European casements, tilt & turns, copper clad bent units, bi-folding doors, lift-sliding doors and French doors are but a portion of our product line. Whether a custom home, multi-residence or historical project, we can make your fantasy a reality.

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Zeluck

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The Xorel Chair 1996 IIDA Award Winner



Brian Kane developed a method of shrink-wrapping Xorel fabric over a injection molded, ridged urethane shell. The Xorel Chair offers comfort, high traffic durability, and self healing, cleanable upholstery. $550 list. For a brochure and local representative: 800-727-6770.

Carnegie

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Expand space with indoor/outdoor areas. Increase business with large, inviting entrances. The Opening Glass Wall, the exterior folding French door system, makes openings up to twenty feet wide possible, while offering an engineered system with excellent weathertightness, high security, ease of operation, and quality wood or aluminum framed constr.. Ideal for both residential and commercial applications. 1-800-873-5673. Fax 415-383-0312.

Nana Wall Systems, Inc.

CIRCLE 150 ON INQUIRY CARD

(continued from page 209) copter to a mountaintop, much like a lunar landing module. The red aluminum structure, well insulated and able to generate its own solar energy, has already been tested in the Swiss alps and would be an ideal weekend getaway for super-hikers.

10 Houses, *series edited by Oscar Riera Ojeda. Rockport, Mass. Rockport Publishers, 1996, 1995, about 100 pages each, $20 (paper).*

Aimed at a general audience, this series of books—each with the same title, but focusing on a different architect—features beautiful large photographs and short concise texts. Architects covered in the last two years include: Gwathmey Siegel & Associates, Peter Forbes, and Peter Gluck.

Wendy Moonan is an editor of House & Garden.

Factory Mutual Approval Guide, *Factory Mutual Research Corporation. Norwood, Mass.: 1996, $100 (CD-ROM)*

Factory Mutual, a leader in property-loss prevention engineering, has issued its 1997 Approval Guide in CD-ROM format. In addition to Fire Protection, Electrical Equipment, and Building Materials information, previously published in three separate volumes, the disk holds the 1997 Property Loss Prevention Resources catalog. 617/255-4681.

Omissions & Corrections

The correct name of the design-resource product [RECORD, August 1996, page 56] is DesignBlocks, from Autodesk Data Publishing. McGraw-Hill's Sweets' Group is a contributor.

Credits for the Science, Industry and Business Library [RECORD, September 1996, page 90] should have included telecommunications consultants DVI Communications, Inc.

The names of the third-place winners in the Bucharest 2000 competition [RECORD, November 1996, page 50] should have been spelled Adam Drisin and James Saywell. They are, respectively, American and Canadian nationals.

The last line of the address on the AIA/CES Self-Report Form [RECORD, November 1996, page 134] should have been Norman, OK, 73072-6400; Fax, (405) 325-6995.

The Product Report item "Snow/ice dam" [RECORD, December, 1996, page 89] should have listed the manufacturer, Thybar Corporation, IL; 800/666-CURB.

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Professor John C. Keene,
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Department of City and Regional Planning
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Candidates should send a curriculum vita, a short statement concerning the courses that he/she would like to teach, and the names of three references to: Laura Wilcox, Urban Designer/Planner Search, MIT 9-519, 105 Massachusetts Ave., Cambridge, MA 02139. Application deadline is March 1, 1997.

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Dean, School of Architecture and Design, Philadelphia College of Textiles & Science, School House Lane & Henry Avenue, Philadelphia, PA 19144-5497. Review of applications will begin January 30, 1997. Tel: 215/951-2896. AA/EO Institution.

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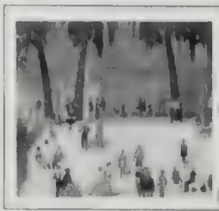
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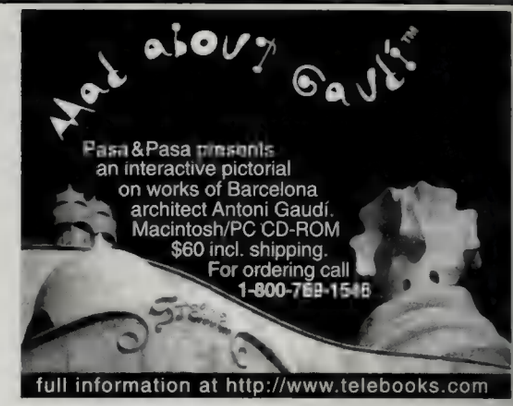
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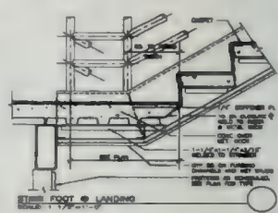
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AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

This month's installment of the ARCHITECTURAL RECORD/AIA Continuing Education Series covers metal roofing. To focus your study, use the learning objectives on page 161. Read the story, complete the questions below, and check your answers on page 230. AIA members may fill out the self-report form and send it in for two AIA Learning Units.

—Mark Scher, AIA Director of Continuing Education Programs and Products

Questions:

1. List three roof design standards that apply to wind resistance and designing for wind uplift.

Answer 1a.

b.

c.

2. What can an architect do to ensure that flashings are waterproof?

Answer 2.

3. What are three design considerations for handling roof penetrations?

Answer 3a.

b.

c.

4. What are two means for avoiding condensation on metal-roof panels and how are they implemented?

Answer 4a.

b.

5. How does the designer take thermal movement into account?

Answer 5.

6. What are seven considerations for controlling damage resulting from snow in areas of high accumulation?

Answer 6a.

b.

c.

d.

e.

f.

g.

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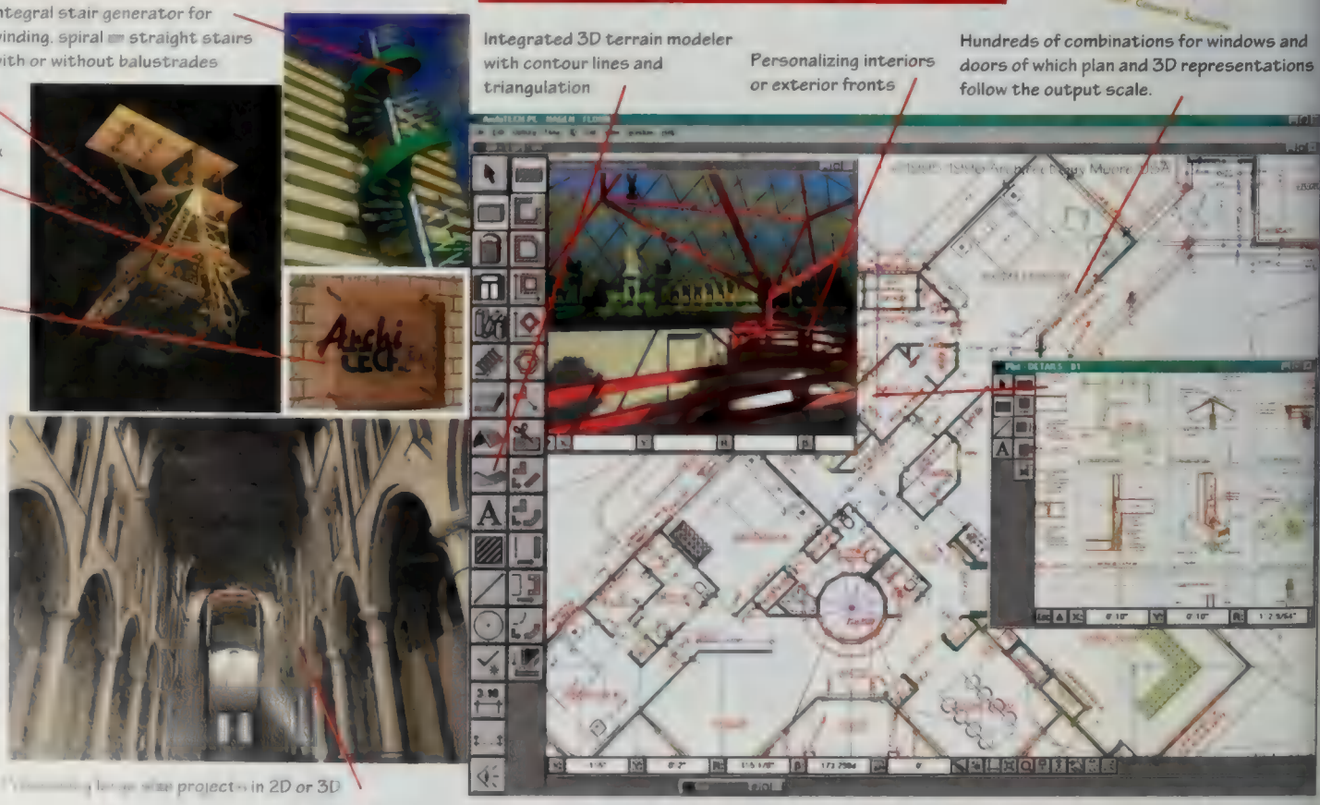
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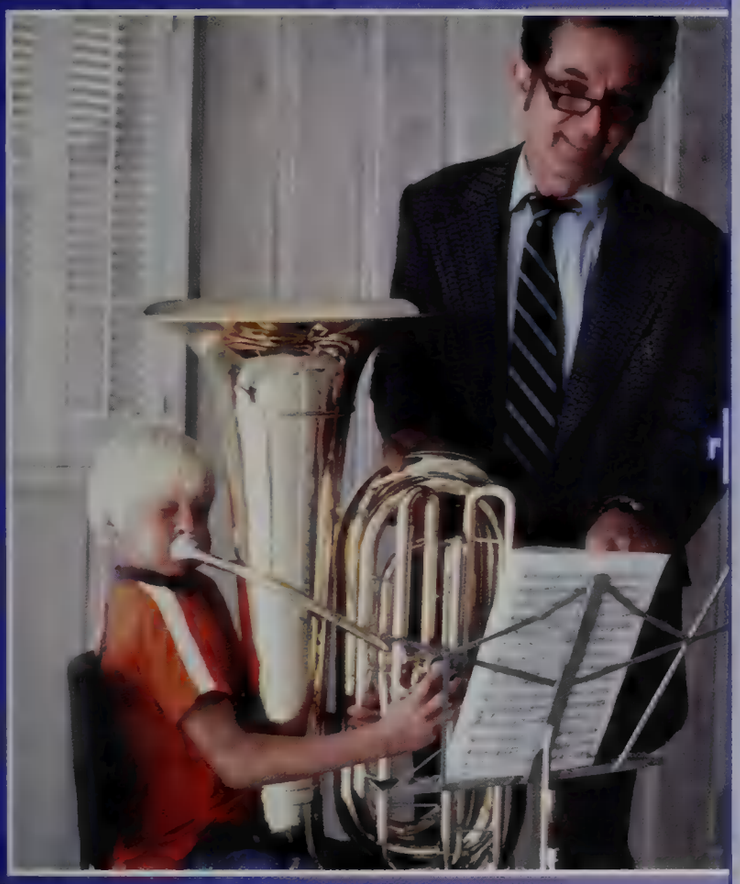
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AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

Questions on page 228
To recieve CES Credits, fill in Self-Report Form

Answers:

1. Factory Mutual Approval Standard For Class 1 Panel Roofs, Class #4471; **b.** ASCE 7-95, "Minimum Design Loads For Buildings And Other Structures"; **c.** ASTM E 1592-94: "Standard Test Method for Structural Performance of Sheet Metal Roof And Siding Systems by Uniform Static Air Pressure."

2. In water-barrier systems, assure that sealants are continuous and gap-free to form a waterproof seal. For all types, size flashings to assure the coverage of base flashings under extreme thermal conditions. Design flashings to extend far enough up walls, curbs, and parapets to keep wind-driven snow and rain out of the building. Assure that flashings can accommodate movement joints. Show how unique configurations are flashed, and don't rely on sealant alone or unprotected soldered joints at curbs and corners.

3a. Provide additional framing around openings for proper roof and flashing support; **b.** Check structural drawings to ensure that framing is sized to accommodate fasteners; **c.** Minimize the number of roof penetrations by considering side wall vents and fans rather than roof installations, or group manifold vent pipes together to decrease the number of penetrations.

4a. Properly ventilate plenums and attics, at a recommended minimum of three air changes an hour. Metal roof retrofits over existing roofs may require five air changes per hour. **b.** Place a vapor retarder, either below the roof system but above the attic or plenum or near the warm space itself to avoid the vapor drive from warm to cold. Sealing around penetrations, seams, and terminations is required to assure the integrity of the barrier.

5. Take panel movement into account at laps, seams, and terminations. Calculate panel movement according to the material's coefficient of thermal expansion. Consider floating clips and observe if clips are properly installed to avoid binding.

6a. Design overhangs and roof configurations so falling snow won't injure passersby; **b.** Offer drag-load guidance to manufacturers; **c.** Consider panel embossments as snow guards; **d.** Form valleys from flat metal stock so that sliding snow doesn't damage ribs; **e.** Use wide, tapered crickets and hips to divert sliding show around penetrations; **f.** Consider whether to vent eaves to attics; **g.** Consider water-barrier detailing where snow and ice may accumulate.

AIA/CES SELF-REPORT FORM

(Use to report learning units earned for Architectural Record only)

Member information:

Last Name *First Name* *Middle Initial or Name*

AIA ID Number

Program/project title: Architectural Record (01.97)
Check the following as applicable.

- ☐ **"Fundamentals of Metal Roofing"**
- ☐ **"High Performance From Start to Finish" (Marvin Windows section, page 146)**
- ☐ **"Designing and Engineering the Future" (APA/Engineered Wood Association section, page 152)**

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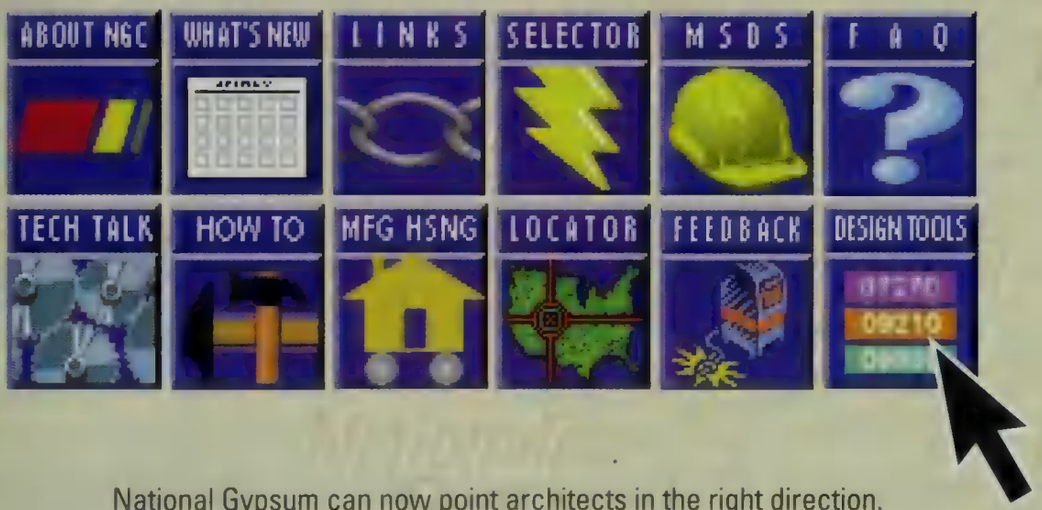
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CIRCLE 95 ON INQUIRY CARD

THE FUTURE: Architects have a new role to play in America's love affair with the automobile.

— BY JOAN BLATTERMAN



This month, our Future column looks at the architectural potential inherent in the technology of the electric car. With minimal equipment requirements and versatile placement options, it will be possible to design battery-charging stations into office and factory complexes, retail malls, hotels—places you couldn't possibly put a gasoline pump. Can recharging modules be integrated into existing facilities? Will Electric Vehicle (EV) service become a margin-boosting bonus for the enterprising restaurateur or theater owner? Will wide use of all-electric cars mean a unique way of dealing with personal transport?

Architecture has always played a prominent role in America's love affair with the automobile. Once a rudimentary network of paved roads was built, architects began creating the infrastructure that gave the auto its setting, and provided reassurance that fuel would be available wherever needed. The minutiae of gasoline-station design became an architectural sub-specie, with courses, exhibits, and books. By the thirties, the gasoline service center was an icon, with sleek, streamlined shapes that gave a style to the era.

Now, with the introduction of General Motors' EV 1, the first American electric car intended for general use, there's a new design paradigm. Toughened clean-air standards should boost use of zero-pollution electric vehicles for the short-haul, stop-and-start commuting trips that foul the air in metropolitan areas. Electric vehicles can operate at speeds over 65 mph solely on the current stored in batteries and discharged on demand to accelerate transmission-free motors. While speed and mileage range is a function of the vehicle's weight and the storage capacity of the batteries, sooner or later a recharge is needed. What architects need to know to meet the technical requirements of a recharge facility aren't complicated—but the human-factor component is vital.

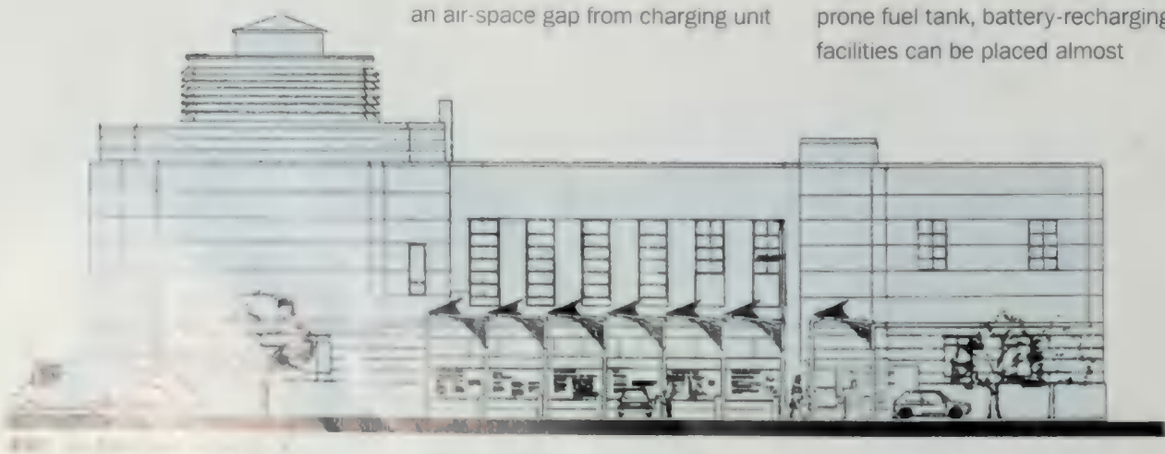
The design of the car-to-power source connection attempts to overcome any reluctance about hooking up to high voltage. Right now, the fledgling industry has two competing technologies that plug in the car. One, championed by GM, is *inductive*—electricity crosses an air-space gap from charging unit to a paddle-like receptor. The other approach, adopted by other American and Japanese car makers—is *conductive*—a direct connection between car battery and power source. Now in development, a single-source, "pig-tail" recharge connector will permit different types of EVs to use the same plug.

The charging technologies currently available, in whatever form, are extremely safe to use. Ads by the Edison Electric Power Institute (EEPI) show a car being charged under water. Users "plugging in" their cars are okay even standing in a rain puddle. Conductive charging systems are fail safe: there is no power at all in the "plug" fitting until a correctly completed connection embeds a "safety pin" and lets current flow through the cable.

What's required for a recharging station?

A big plus for EVs is that the high-current power sources quick-charging batteries will require are widely available—most industrial, commercial, and retail facilities have three-tier power (330V) in place. And because EVs don't need a potentially explosive and pollution-prone fuel tank, battery-recharging facilities can be placed almost anywhere a car can drive. Design consultant Anthony Loui, with architect Amy Alper and engineers Pugh+Scarpa won an AIA photovoltaic-design award for a charging station (pictured) that doesn't need any utility power at all. (For home garages or parking spots where cars will be left overnight, a 120-volt curbside module is sufficient.) The higher-current charging stations can be freestanding kiosks, designed to be unattended and credit-card activated. Stations need lighting and perhaps a weather or security enclosure (rain doesn't affect the equipment or the charging process, though). An attention-getting canopy can be backlit and carry ads or graphics. Landscaping and site amenities need to be considered. Most importantly, the facility must be able to quickly convey its purpose and how to use it.

Recharging-time requirements are part of the program. Today, EVs take several hours to charge, but next-generation vehicles will fill up in about 20 minutes, says EEPI. McDonald's has already approached GM about placing EV charging stations at their restaurants—offering an extra inducement to "take a break today." And stations would be a natural at shopping malls—charge while you charge. Use of electric-powered vehicles depends on the public's perception of a supportive infrastructure. But building that infrastructure is contingent on consumer demand. Who's going first?



Photovoltaic recharge station (left and above) in front of Santa Monica, California's, City Hall.



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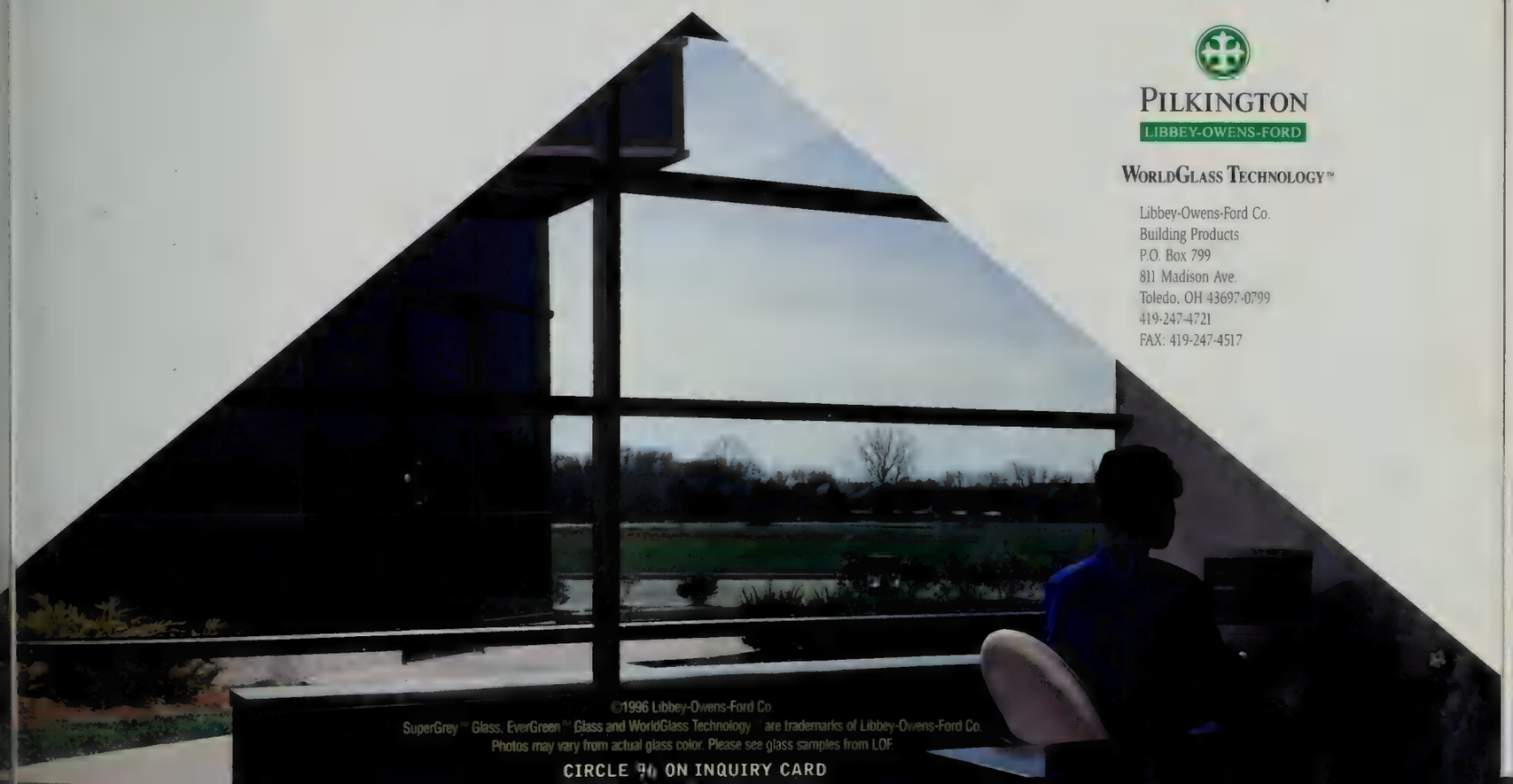
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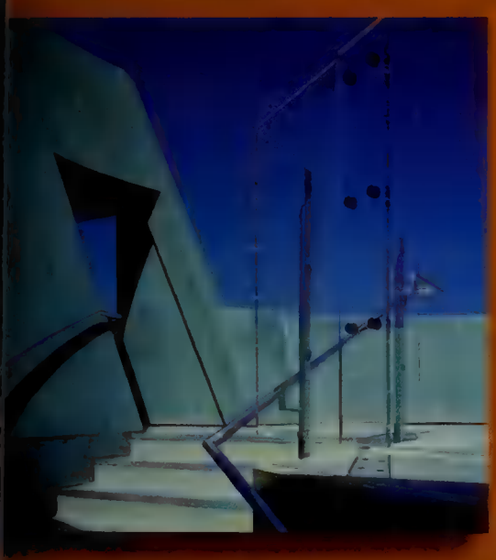
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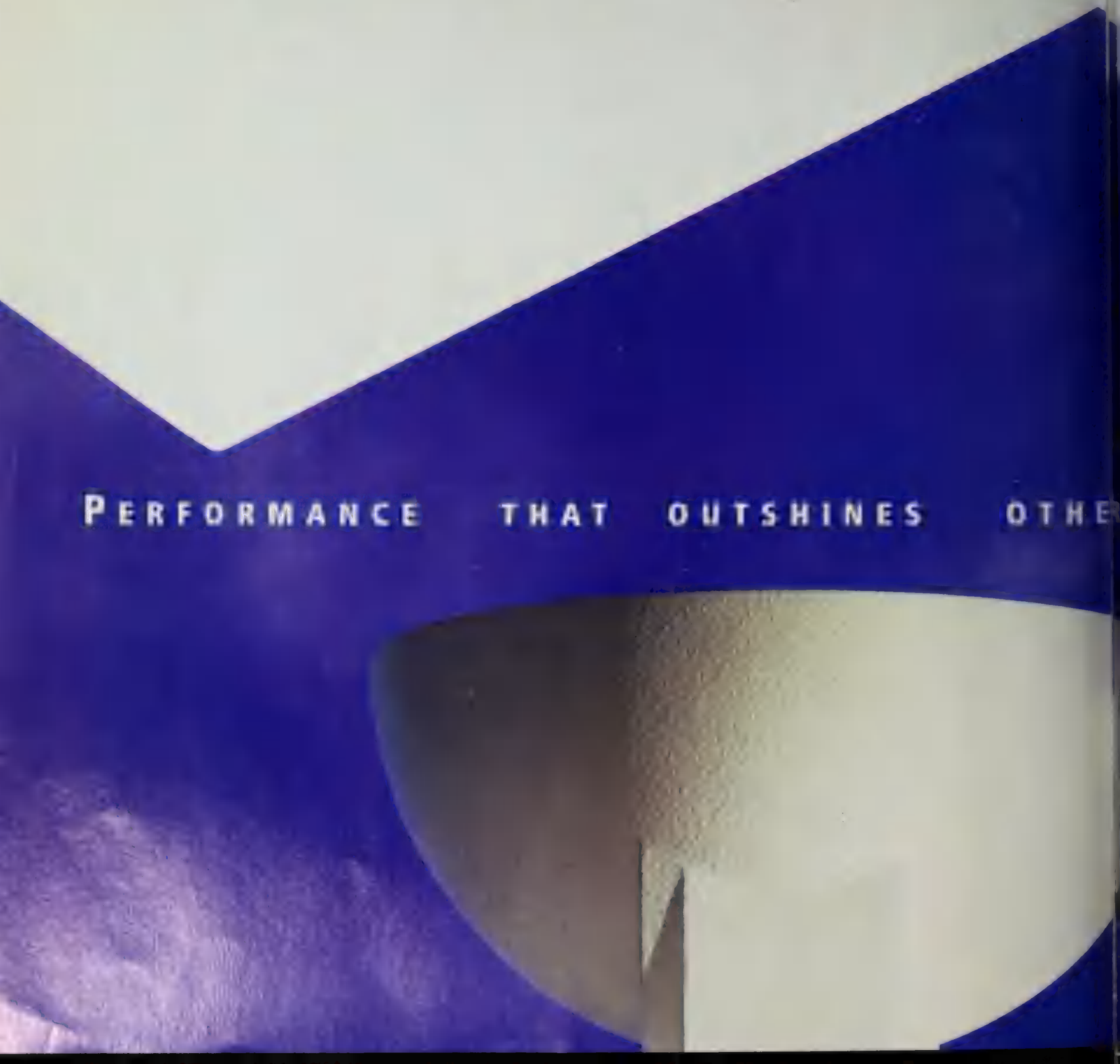
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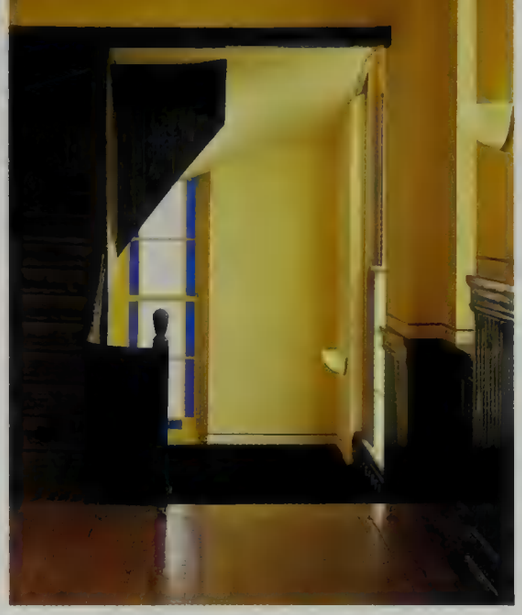
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Above: *Orchard Street Church, Baltimore, Md., by Kelly Clayton & Mojzisek. Photo: © Michael Dersin*

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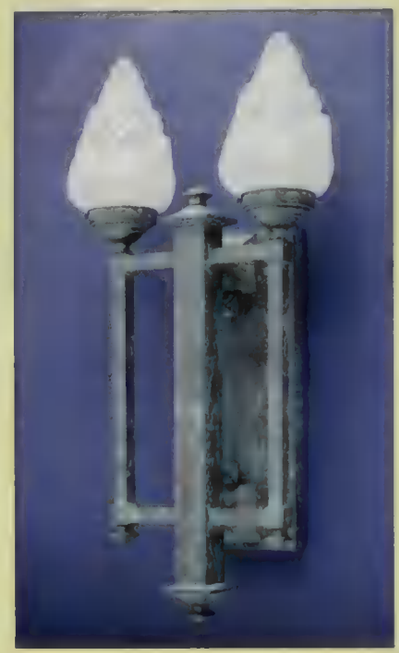
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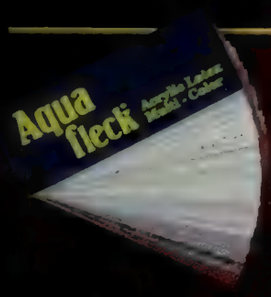
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48. Object snap now snaps to extended intersections.
49. Running object snap dialog box is now transparent.
50. New Apparent Intersection snaps to display intersections regardless of the object's UCS.
63. Boundary edges don't need to physically cross the objects you wish to Extend.
64. Grab all visible objects as boundary edges by hitting enter at the first EXTEND prompt.
65. Lengthen or shorten a line or arc to a specific length with the new LENGTHEN command.
66. New overlay option in the Xref command avoids circular references.
67. The Xref command now searches the AutoCAD path to find referenced drawings.
68. Purge your drawing at any time.
69. Easy to create construction lines that extend infinitely in both directions (XLINE).
70. Easy to create construction lines that extend infinitely in one direction (RAY).
85. Solid profiling commands allow you to convert 3D to 2D (SOLPROF/SOLDRAW/SOLVIEW).
86. Create regions.
87. Extrude along a path curve.
88. Determine mass properties of a model.
89. Fillet and chamfer solids.
90. Faster solid model processor and smaller model sizes than AME.®
91. Control the display of tessellation lines (isolines).
92. Import and export ACIS files.
93. Translate AME models into R13 solids.
94. Rendering is faster and easier.
95. New colored spotlights.
96. Phong shading supports highlights from colored light source.
97. Material Library and Editor included.

For all those who have "Can AutoCAD Release 13 really make

10. Easily import a TXT file.
11. Create stacked fractions for better readability.
12. Single-line MTEXT editor for DOS users.
13. Map slower fonts to faster ones (FONTMAP).
14. Fill in text fonts (TEXTFILL).
15. Font Substitution during file open simplifies drawing transfer and font changes (FONTALT).
16. Move, rotate, erase, copy, mirror, stretch, or scale each text object.
17. Automatically stack fractions in dimensions.
18. Inferred linear dimensioning automatically distinguishes between horizontal and vertical dimensions and repositions text.
19. Creating dimensions requires fewer steps.
20. Dimension Style Families allow you to define dimension type differences while maintaining
30. Easier to modify dimensions.
31. Dimensioning has its own units settings.
32. Create splined leader lines.
33. Create multiple lines of text in leaders.
34. Automatic island detection finds a complete boundary with one pick.
35. Associative hatching automatically updates hatch to modified boundaries.
36. The restructured BHatch dialog box is simpler and faster to use.
37. Drive the BHATCH command from the command prompt if desired to run scripts.
38. Create a hatch boundary manually on the fly.
39. Easily edit hatch properties without redrafting the hatch.
40. New ISO compliant hatch patterns included.
41. Load linetypes from within the Layer dialog box.
42. Visual representation of linetypes for selection before loading.
51. New FROM object snap can reference a point from within a command.
52. Object Cycling insures that you select the correct object every time.
53. Improved Fillet command can be used to cap parallel lines.
54. Fillet between a line and a polyline.
55. Fillet without trimming the existing geometry.
56. Fillet that doesn't cancel when you miss the object.
57. Chamfer by length and angle.
58. Chamfer without trimming the existing geometry.
59. UCS restrictions are gone for fillet and chamfer commands.
60. Trim using cutting edges that don't physically cross the objects to trim (implied edge).
61. Cutting edges don't need to be on the same UCS as the objects you're trimming.
62. Grab all visible objects as cutting edges by hitting enter at the first TRIM prompt (two less steps).
71. Group objects together by name with object grouping (GROUP).
72. Draw multiple parallel lines using a variety of linetypes and colors (MLINE).
73. Intersection clean-up for multiple parallel lines simplifies wall creation.
74. Save multiple MLINE styles for quick access.
75. Fill in parallel lines with a different color (MLINE).
76. True geometric Ellipses.
77. Snap to the center or quadrants of an ellipse.
78. Create elliptical arcs.
79. Create NURB splines.
80. Specific editing commands for greater control of new splines.
81. Explode blocks with varying X and Y scale factors.
82. Solid modeling included in base AutoCAD.
83. Create ACIS solids with solid primitives.
84. Perform Boolean operations on solids and regions (union, intersect, subtract).
98. Assign materials for shading by layer.
99. Import and export 3DS files.
100. Render to file with image only; supports over a dozen new file formats.
101. Windows standard GUI.
102. Standard Toolbar contains icons for high-usage drawing management and drawing editor navigation functions.
103. Easy to create and modify custom toolbars.
104. Toolbars can float or be docked.
105. Object Properties Toolbar offers quick access to layer, color and linetype functions.
106. Easy to understand icons with tool tips.
107. Drag and drop toolbar editing.
108. Preview drawings before opening to speed up identification and avoid opening the wrong file.
109. See a visual representation of WBLOCKS before you insert them.

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110. Customize your keyboard with Accelerator keys.
111. Toolbar flyouts included.
112. Most frequently used toolbar buttons float to the top of the flyout.
113. Scroll bars permit easy panning.
114. Improved user feedback on standard status bar.
115. Can turn tilemode on and off at the status bar.
116. Updated tablet menu.
117. Merge your custom menu into the existing AutoCAD menu with partial menu loading.
118. Set a new current layer quickly from layer control feature of the Object Properties Toolbar.
119. Freeze, thaw, turn on or off layers quickly from the layer control feature of the Object Properties Toolbar.
134. On-line What's New shows overview of new features in Release 13.
135. Cue Cards walk you through basic CAD operations.
136. CD-ROM installation is faster, easier.
137. Multiplatform license includes DOS, Windows 3.1x, Windows NT and Windows 95
138. Typical, Custom or Minimum install options.
139. Configuration files are now portable and ASCII.
140. No more ACAD.PWD file.
141. The ability to turn off the automatic Backup files.
142. Improved control over memory management.
143. OLE 2.0 with drag and drop allows you to dynamically embed spreadsheets, video clips, Word documents into AutoCAD drawings (or AutoCAD drawings into a Word document).
144. AutoCAD SQL Environment (ASE) allows access to data from external database management systems, including SQL2, ODBC 2.0, Informix (DOS), Oracle (Win 3.1/NT).
145. Read drawing files created in previous AutoCAD releases.
146. Save as a Release 12 drawing file.
147. ARX (object-oriented development platform) allows for tighter integration with 3rd party software.
148. Broad peripheral support.
149. Undo support for external database links and operations.
150. Output to STL format.
151. Xref and Block support for non-graphic links.
152. ASI access to ASE link mechanism.
153. ASILISP contains new LISP functions for accessing external databases.
154. Optimized for 32-bit Windows operating environments, resulting in 20%+ increase in performance over 16-bit Windows 3.1x.
155. WHIP driver (High Performance Driver for Windows) increases performance, including near instantaneous redraws.
156. Real-time Pan.
157. Real-time Zoom.
158. Incremental saving of the drawing file.
159. Faster regens due to more drawing data stored in memory during working session.
160. No regen on Window resize.
161. Optimized output on selected Windows system printer drivers.
162. Improved HP GL/2 plotting performance on Windows and DOS platforms.

We understand. You may not have the time to read them all. But, suffice it to say that we have added scores of new features to AutoCAD® Release 13 to make your life on the job easier and less labor intensive than ever before.

Case in point: Release 13 was designed for both Windows 95® and Windows NT,™ letting you leverage your knowledge of Windows and giving you access to the features you use the most. In fact, R13 on Windows 95 and Windows NT lets you work 20% faster than if you were working on Windows® 3.1x.

been asking the question, my life easier?," we offer 176 yes's.

120. Command prompt is now a moveable, resizeable and scrollable window.
121. Copy the command history to the clipboard.
122. AutoCAD has added a search engine to find drawing files.
123. Aerial viewer has been improved and is more user friendly.
124. Don't have to reload menu with each drawing load.
125. Contains a simple to use, on the fly icon editor.
126. Regular and full menus offered.
127. Ability to retain Release 12 screen menu and command line layout to ease learning transition.
128. Full on-line documentation available on CD-ROM.
129. Task-oriented documentation.
130. Improved on-line Help.
131. On-line command reference.
132. On-line Tutorial steps through basic features.
133. On-line Quick Tour shows AutoCAD's capabilities.
163. ADS applications run faster.
164. AutoLISP programs run faster.
165. Pager included for large drawing memory management.
166. Multiple sessions of AutoCAD.
167. Windows 95 user interface.
168. Support for Long Filenames.
169. Supports Universal Naming Convention (UNC) for Files and External References.*
170. Supports UNC for configuration files.*
171. Uninstall from Windows 95 or NT through the control panel.*
172. Email enabled for MAPI compliant programs allows users to attach DWG files to an email.*
173. DOS, Windows 3.1x, Windows NT 3.51, Windows 95.
174. Windows NT on Alpha Systems.
175. UNIX:® Sun® Solaris,® HP-UX,® SGI IRIX,™ IBM-AIX.®
176. Ability to generate .DWF files and make your drawings available over the Internet.

Release 13 also supports AutoCAD Runtime Extension (ARX) applications from developers like KETIV Technologies, Inc., ARCHIBUS, Inc., and Softdesk, Inc. These next generation tools use the object-oriented database in R13 to provide you with a seamless and associative design environment. Plus, R13 has Internet support, so now you can view, send, and share design content over the Internet.

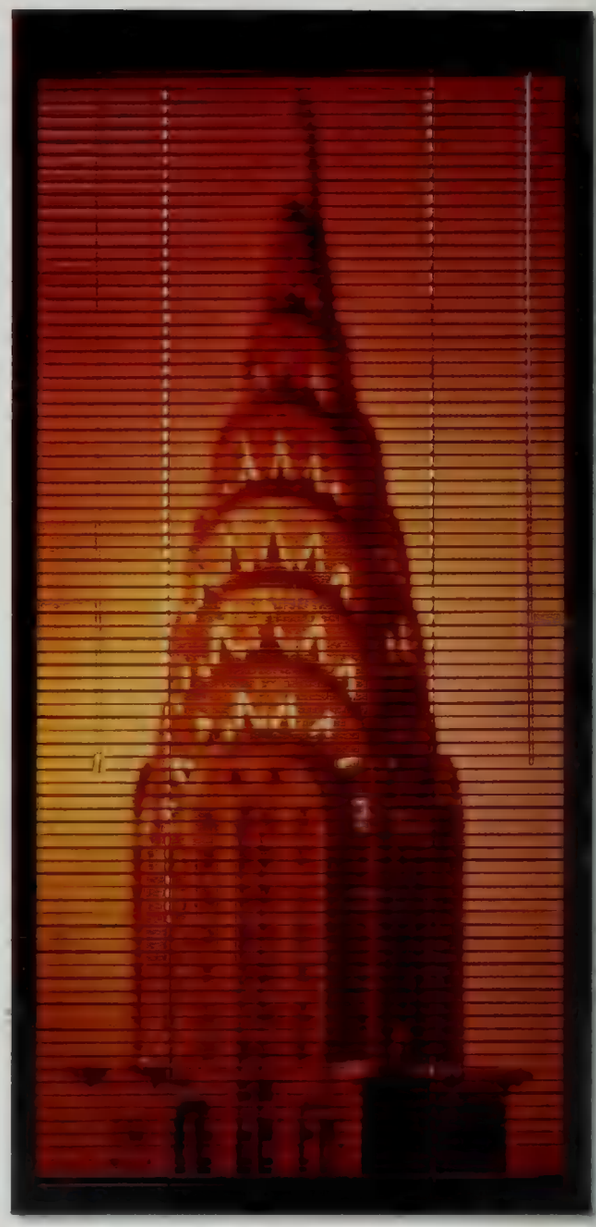
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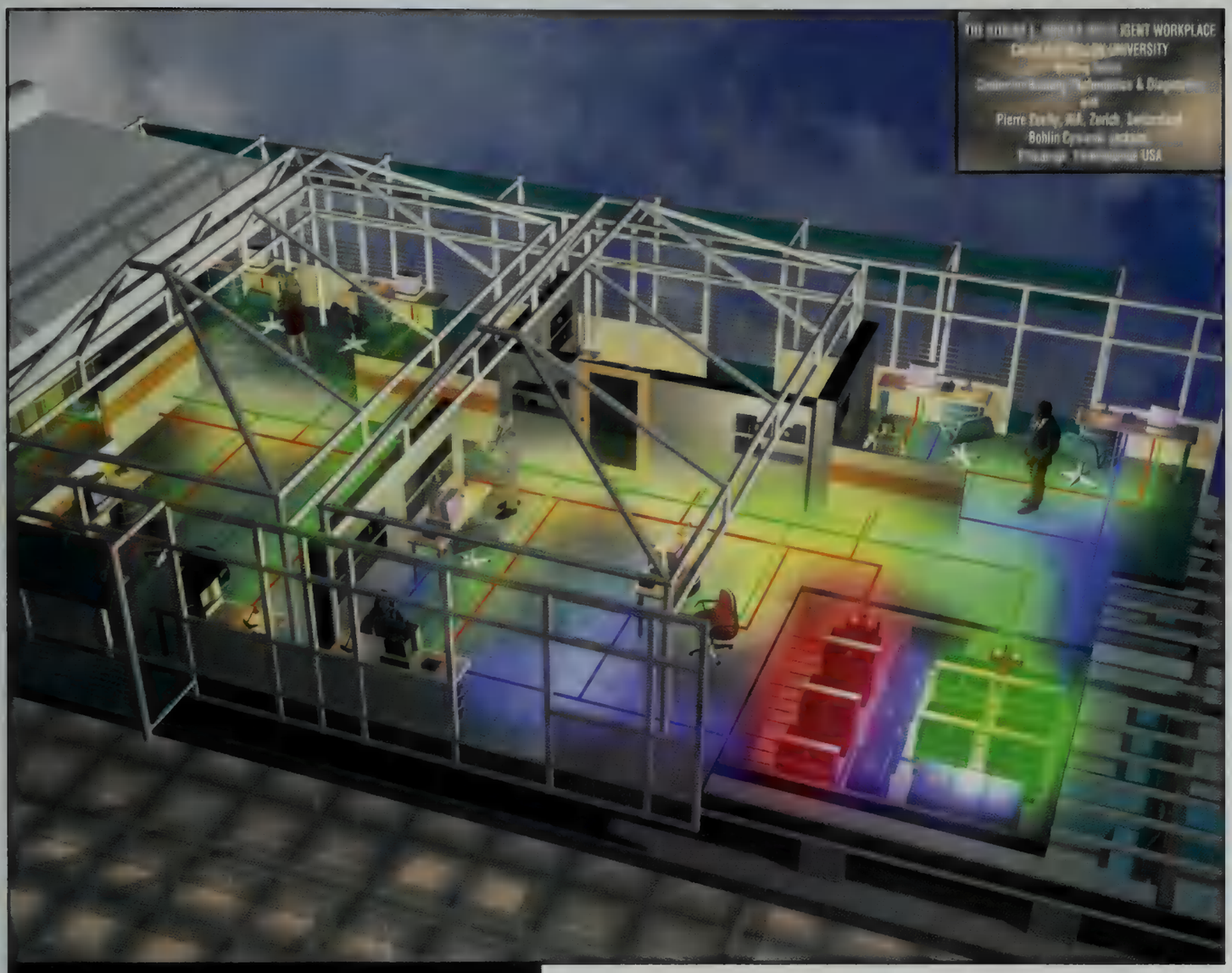
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CIRCLE 10 ON INQUIRY CARD



EDITORIAL:

Part of Who We Are

— ROBERT A. IVY, FAIA

Who among us hasn't stood quietly in an adobe church and grazed a hand along the wall to feel the stubble and the grit? Who hasn't squinted at the razor-thin mortar joints in Boston's Beacon Hill and marveled at the precision of early craftsmen? Who hasn't stood by the harbor in Newport and turned to catch the sunlight on a church spire and known—this is what it was like; this is part of who I am.

Buildings are rooted in time and place, three-dimensional messages from other eras, speaking through form and texture. Building preservation concerns authenticity, of allowing the reality of earlier moments to resonate through, unalloyed, to the present.

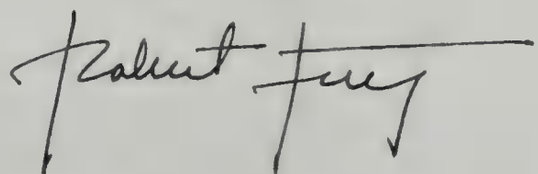
In architecture, the historic preservation movement has served as guardian and champion of authentic experience in a culture hell-bent on reinventing itself, sometimes in spite of architects, engineers, contractors, and developers. No more. Kermit Baker, the AIA's chief economist, estimates that work on existing buildings, excluding maintenance, now hovers between 50 and 60 percent of all construction volume. Historic preservation is big business.

The preservation crowd has changed. No longer limited to the social register, preservation now counts average citizens, communities, and governments as spirited advocates. Peter Brink, a vice president of the National Trust for Historic Preservation, describes how the Trust's Main Street Program, which has galvanized entire small towns toward self-awareness and improvement, is broadening its work into inner city neighborhoods. The Trust's Honor Awards program now regularly mentions groups such as New Orleans' Coliseum Square Association, an effective neighborhood re-launched into health by its residents, or the Chicago Bee Building, converted to a branch library in the Black Metropolis Historic District.

Perhaps no change in preservation is more encouraging than its adoption by minority populations, including the African-American community. There is real news to report: consider Baltimore, where we report on the conversion of a former African Methodist Episcopal Church into headquarters for the local Urban League; or Nantucket, Mass., where local residents recently restored a meetinghouse for free blacks built in the 1820's. History, whether heroic or mundane, comes alive when placed in the context of a meeting room. It jumps off the page when you can see where real people expended their passions and lived their lives.

Strong forces still threaten valuable properties, however. Sometimes, local economic or social pressures demand outside intervention. While architects often blanch at the thought of additional layers of red tape, government has proved an effective ally. In the United States, federal programs like ISTEA (the Intermodal Surface Transportation Efficiency Act) are helping revitalize historic depots and other structures as the nexus of 21st century urban transportation. The same story is occurring internationally: Cuba, as we report in this issue, treasures its buildings as invaluable to defining national character.

Preservation needn't stifle creativity and it does not imply being mired in the past. It can, in fact, provide a framework for original additions or spirited interiors, proposing a richer present and an informed future—cities with older landmarks pulsing with new life, neighborhoods that ground us and let us grow, new buildings that fit into a whole. Preservation is an action.



LETTERS

The New RECORD

I perused the new January issue with more than usual interest and found it meaty. I had the satisfying feeling that the feature subjects were all eminently worthy of the attention they got (a feeling that isn't very frequent, as I'm sure you will agree). Now the quibbles. (And whoever writes to the editor except to quibble?) At the beginning of the [Michael] Sorkin piece [January, pages 84-97] he cites some statistics to show that Phoenix's area grew more rapidly than its population, but his figures show a 10-times growth in population and only a 3.8-times growth in area. Am I missing something? Later on, he refers to Paradise Valley as "the city's self-designated soubriquet," but Paradise Valley is actually a separate municipality in the area. (Does he think Yonkers is actually a soubriquet for New York?) He does say convincing things about the buildings, which is after all the ultimate point. I can't wait to see some of them.

—John Morris Dixon, FAIA
Editor-in-Chief, ArchitectREACH
Stamford, Conn.

I enjoyed the new RECORD premier issue very much. As a participant in your San Francisco focus group, I am impressed that you were able to implement so many of the group's comments.

The new issue has just about everything we requested in a professional journal: brief news items; in-depth project evaluation, including a product/material section; criticism; and nice photography. The features on CAD and professional practice are useful and informative, and the three opportunities to obtain continuing education units will be helpful.

In short, if you keep this up, I'll actually read the magazine instead of flipping through it and then putting it on the pile of "to be read" stuff, but this issue is going to be carried around in my briefcase for a while as there is much to read. I am excited to have a useful and compelling professional journal at last, and will look forward to the next month's issue. The only thing I'd keep on my list of requests is to see more large-scale construction sections and details.

—Tom Hardy
San Francisco

I've just read, with some considerable pleasure, the article by Michael Sorkin on Phoenix and its new Art Museum addition. His comments, although occasionally betraying the brevity of his encounter with our extraordinary metropolis, are nonetheless perceptive and generous.

I am, however, less happy that he did not dig deeper to discover why "Suddenly Phoenix has become a showcase for medium-scale modern architecture," nor mention that the parade is not yet over, for Richard Meier's Federal Courthouse promises to up the scale a little more, and the new Science Center by Predock is due to open in April.

We would not claim sole responsibility for the quality of this work, but there is a common denominator, which is this College [of Architecture] and its members. We have been involved both during architect selection and design-development in all of these projects and, on several, have been advisors to the clients from the earliest stages.

This is an important role for colleges and schools of architecture, and where they have been able to fulfill it, as in Cincinnati and here in Phoenix, the results are spectacular.

Our communities turn to the universities for judgement and expertise in many fields. When there is evidence that architecture has benefitted from that relationship, it might be worth celebrating.

—John Meunier, dean
College of Architecture
Arizona State University
Tempe, Ariz.

The inaugural issue of the new ARCHITECTURAL RECORD came up short in its lead article, Holl's Housing Project [January 1997, pages 65-71].

You devoted thirteen pages to this project with some conceptual site and massing studies and numerous trendy photographs of building facades. There was not a single floor plan of the apartments or the buildings, nor was there a discussion of apartment living arrangements unique to the Japanese culture.

Are the people who live in this complex totally irrelevant?

—Ulrich Franzen, FAIA
New York City



Bad will in Peru revisited

Cynthia Richardson's negative reaction to the new United States Embassy in Peru [ARCHITECTURAL RECORD December 1996, page 145] is especially appropriate when we consider the Peruvians' prevalent and enduring view of the United States presence in Latin America. They see us as the overbearing, bullying and insensitive "gringos" or "ugly Americans." In this light, the image of the Embassy as a domineering, garish, and non-contextual monolith could not have been a worse choice.

"There is a moment when you decide there are no apologies," says the architect. Why? Are we "just following orders?"

—Rudy Schwarz
Rudy Schwarz Architects
University City, Mo.

More "Boldness Gap" comments

Robert Campbell is right when he says that present American design is visionless [RECORD, November 1996, pages 76-78]. In visits to the U.S., all my partner and I see are commercial malls and the same boring housing plans. We think the architect's nature is to be creative. Critics might not like your work, but you need to be inventive and free. Architecture also has to be related to your social and cultural world.

—Arturo Calderon Zugasi
Ezquerra & Associates International
Mexico City, Mexico

In his opinion piece in the November issue, Robert Campbell talks of the bold, intense and daring architecture in other countries and quotes American architects who prefer foreign clients because foreign clients never question design. These architects feel their work should never be challenged; it is sacred territory. This is precisely the attitude that has given the architectural profession a reputation for snobbery and elitism. When architects are more concerned with protecting their hallowed ground than designing buildings that are profitable and easy to use, it is no wonder clients are fed up with us.

When a desire to create something grand that will win awards takes precedence over meeting a client's needs—when form prevails over function—we have done our clients a disservice and have brought shame to our profession.

A better indication of architecture's contribution to society is in the amount of repeat business a firm generates. Clients who find a building difficult to use are unlikely to choose the same architect again. If it doesn't work, it doesn't matter how many awards it's won.

—Cathy Rodgers
Communications Specialist
Earl Swensson Associates
Memphis, Tenn.

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CIRCLE 11 ON INQUIRY CARD



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CIRCLE 12 ON INQUIRY C

SPEAK OUT: Mentoring in Harlem: "I try to give them the whole truth of my experience..." — BY JACK TRAVIS



k Travis founded JTA, an architec-e, space planning, and interiors firm 1985. Previously he had worked for dmore, Owings & Merrill, Switzer oup Inc., and Sidney Philip Gilbert ociates. His clients include Spike Lee, sley Snipes, and NBC.

Five years ago, I made the decision to live and work in Harlem. That decision was, in part, a way of renewing my commitment to serving people in need, the commitment that first guided me into the profession of architecture.

For me, the practice of architecture has always been coupled with the necessity to teach. Growing up in Las Vegas, I saw few architects in my community who could serve as role models. In 1985, I opened my own office, and six years later, I founded the Studio for Afri-Culturalism in Architecture & Design, a non-profit organization, for the purpose of gathering and disseminating information on black culture as it relates to our profession and practice. It was at that time that the importance of working and teaching in a black community became paramount to me.

My private practice has grown considerably in the last few years, servicing clients—increasingly African-American and mostly residential. At present, we are reorganizing to broaden the scope of our work. The Studio and its potential are just as important.

Coming home to Harlem has been a bittersweet experience. She is a community where resources, infrastructure, and purpose are remote commodities for far too many of her residents. Embracing this community as home carries with it the bitter reality of an environment in decay, of vandalism, of "trains" of unemployed men and women derailed on urban streets.

The basic services in Harlem—police, fire, medical, construction, maintenance—are administered mostly by people who do not reside in the community. Retail businesses, land ownership, and real-estate development are also largely in the hands of others.

The children of Harlem perceive this phenomenon. They learn that there is no other group, except perhaps for Native Americans, so controlled by outsiders. The children can thus imagine the sober reality of their own potential under such conditions. Many, at an early age, succumb to the destructive pressures around them.

What keeps me optimistic is the beauty of spirit and the strength of character of so many of the leaders and builders who work to keep this community vital. And, in part, because of them, there are children who do have a sense of purpose.

When I represent my profession in classrooms, I tell them that as a black architect, there is never a dull day in my life. Every day there is so much to do and so much that must be done for the African-American community. I try to give them the whole truth of my experience and all of the varied emotions I feel about being an architect here in Harlem, now.

Our goal is to increase the environmental awareness of young people and show them that they are capable of effecting change. To this end, the Studio offers three mentorship programs.

The first is a six-week Student Summer Workshop, open to high school, undergraduate, and graduate students, focusing on design issues involving the black community. Some of the project types we've examined include a marketplace, a place of worship, an outdoor educational and cultural center, a reading room dedicated to James Baldwin, and a plan for an African village in Harlem.

In program two, architects involved in the Studio make twice-monthly visits to classrooms, where we introduce the importance of creating and imaging. Pupils are challenged to research cultural and architectural information so they can design their own bedrooms, build a retirement home for their parents, or conceive monuments for inspiration in their neighborhood.

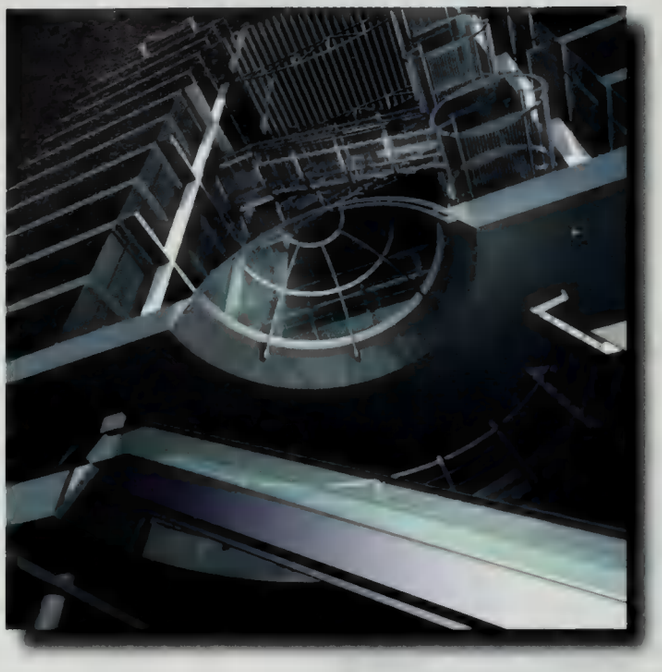
The third program is our open door policy, whereby students with talent in architecture can meet people in the office environment. Our emphasis is on how creativity and economic reality coexist.

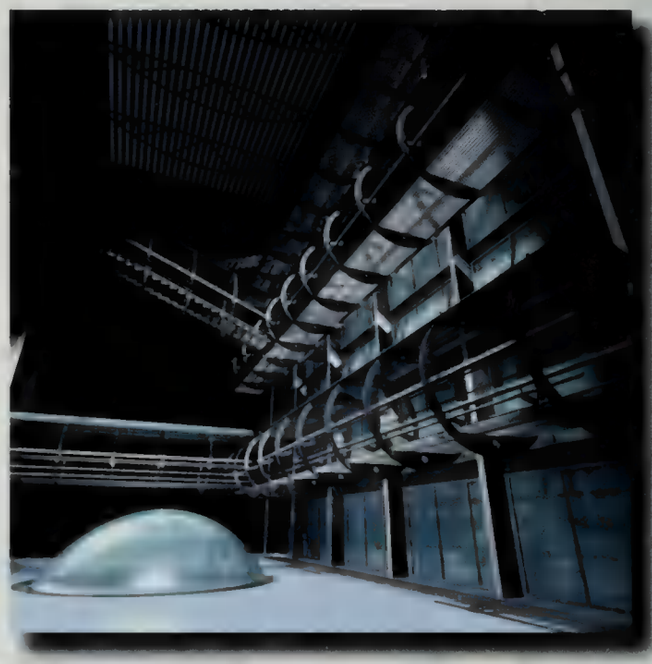
I still feel I am at the beginning of my return to Harlem. The first job was to establish my firm. Helping to tap the community's assets in order to nurture our young minds is the next step. Our greatest resources still remain the children. ■

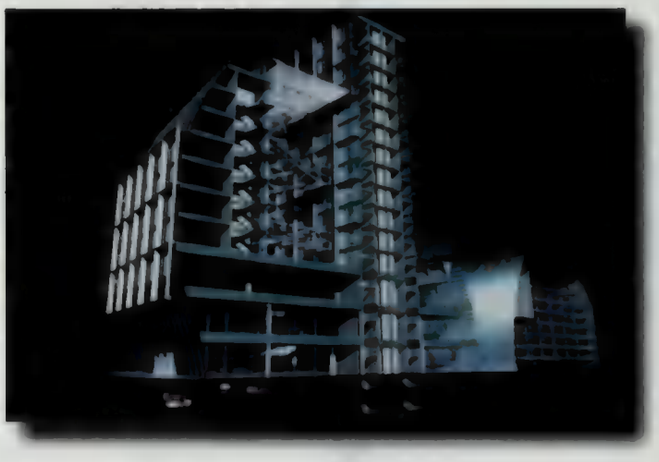
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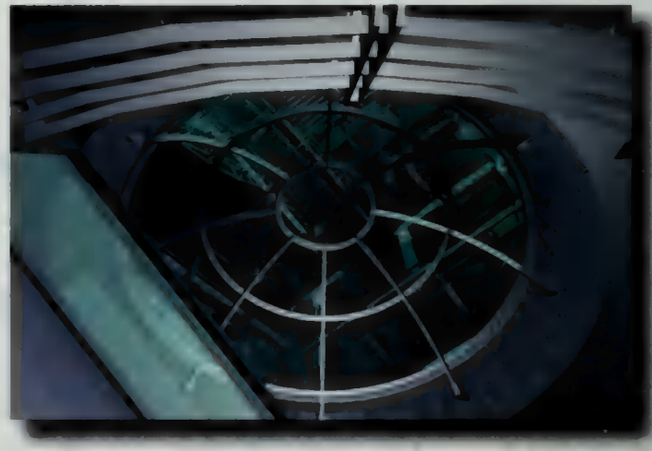
If you would like to express your opinion in this column, send submissions: by mail (with a disk, if possible) to Speak Out, ARCHITECTURAL RECORD, 1221 Avenue of the Americas, New York, N.Y. 10020;fax212/5124256;mail:rivy@mcgraw-hill.com.Essays must not exceed 700 words. The editors reserve the right to edit for space and clarity. Where substantial editing occurs, the author will receive final text approval.

FOR ARCHITECTS IN THE INFORMATION AGE









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CIRCLE 13 ON INQUIRY CARD

MENTORS: After architectural partners split, what is next for the sole proprietor? *Plus*, what to do about product knockoffs.

Mark Zweig is president of Zweig White & Associates, Inc. in Natick, Mass. He consults to top management in A/E/P firms throughout the United States in strategic planning, turnarounds, organization restructuring, mergers and acquisitions, marketing, operations, finance, and human resources.

Sally Sirkin Lewis, a designer, is president and CEO of J. Robert Scott, Inc. in Los Angeles, a member of the Design Hall of Fame, and chairman of the Foundation for Design Integrity.





After spending 15 years building a large, successful partnership, my partner and I split. At the age of 50 I find myself as a sole proprietor of a 23-person firm. I am now considering making three of my associates partners. What advice do you have?
—unsigned

Mark Zweig responds: Start the transition process immediately. Accept the fact that it's okay that no one single individual will be a clone of yourself. Educate your staff on the business aspects of the practice by tracking key firm-performance indicators, summarizing and interpreting these in a one- to two-page monthly memo, and sharing it all with every employee.

Develop a buy-sell agreement with a valuation formula that ties stock value either entirely or largely to the firm's net revenue (gross billings less subs and reimbursables). Begin selling stock out of the treasury (about 3-5 percent each) to the three best people, but tell them that being an owner does not mean you will all make every decision jointly (a common problem in A/E firms!), nor does it mean they have guaranteed lifetime employment.

Allow them to finance their purchase over three to five years at a reasonable interest rate and pay for it through payroll deduction. Pay profits to owners monthly, separate from your "regular" bonus pool, in accordance with their share of ownership (S-corp status helps here) so there's a reason to buy more. Tie stock buy-back terms to how the shareholder leaves the firm. Do what's necessary to grow the firm by 15 percent or more each year, and pay out about 10 percent of the value (per the buy-sell agreement) annually in the form of S-distributions or additional owner compensation.

As the firm grows, part with the tasks you don't want to do, add more shareholders, and make sure that they understand that they won't all become corporate managers just because they are owners.

I have a recurring problem in that I have many clients asking me to select furniture, fixtures, or fabrics which look like or imitate well-known designs, but cost far less than the known item or fabric. In fact, they are requesting that I select a "knockoff".
—unsigned

Sally Sirkin Lewis responds: I believe this can be turned into a positive situation. You must explain to your client that it is important for you as a professional to maintain your ethical standards and integrity in the industry. Being a knowledgeable designer, it is imperative that you do your homework, and it should therefore be easy for you to specify any number of companies who produce furniture or textiles which not only fit the design parameters, but the client's budget as well. If it is furniture that you are selecting, you can also suggest to the client that you request the original manufacturer's quote on doing a less expensive piece.

In the event you are writing specifications for a large project, as the designer you can specify "no known equal." In the event it becomes necessary for a substitution to be made, you can note on the original written specifications that any new substitutions must be made by the designer of record. If you are intent upon maintaining the integrity of your design, then you can control its destiny.

Questions: *If you have a question about your career, professional ethics, the law, or any other facet of architecture, design and construction, send submissions: by mail to Mentors, Architectural Record, 1221 Avenue of the Americas, New York, N.Y. 10020; fax 212/512-4256; or e-mail: rivy@mcgraw-hill.com. Submissions may be edited for space and clarity.*

PULSE: RECORD readers were asked: Has American architecture lost its boldness?

YES: 84% NO: 16%

Yes: "I think one of the key issues here is why architects have such a weak position in our culture. The government, corporate America, and the general pubic all seem out to stymie, or at least dilute, the clear visions of good architects. As Robert Campbell described one of Rafael Moneo's recent client relationships as 'enlightening,' he rightly responded, 'architects in the U.S. would kill for that kind of standing.' A general lack of appreciation for the arts, quality in design of everyday objects, and obliviousness to our physical environment are problems that are far too prevalent in American society.... Better education of all Americans in matters of design and environment would help. Unfortunately our public schools are forever cutting out arts education and our government is forever decreasing the budget for arts organizations.... Amidst all of this morbid news, I have hope for the future. As the '90s mature, architecture seems to be moving beyond the many fad styles such as Post-Modernism and Deconstructivism. There is a heightened awareness of the environment and sustainable building. The world is also getting smaller. More people are traveling, or at least being exposed through television and the internet, to European and Asian cities where other ways of doing things are presented.... Of course, we architects have one of the biggest responsibilities of all: As Ernest Boyer and Lee Mitgang recently recommended in their 'Building Community: A New Future for Architectural Education and Practice,' the Carnegie Report, 'architects and architectural educators...ought to be among the most vocal and knowledgeable leaders in preserving and beautifying a world whose resources are in jeopardy.' In other words, we architects need to be bold, educate, and practice what we preach!"
—Mary Ellen Lynch Comisso, Long Island City, New York

Yes: "Americans are the most creative and innovative in all fields except architecture. We as architects have lessened our role through 'partnering' in the building environment. The resultant consensus and compromise produces architecture of expediency, economy, and pandering to popular (uneducated) design by committee. 'Too many chefs spoil the....' "
Rodney F. Coles, AIA
Salt Lake City, Utah

No: What is boldness? Lucy the Elephant in Margate, N.J. is one example; so is the Oscar Meyer Weiner car. They've been around a long, long time, but they don't function. I look at the boldness and the incredible beauty of the stuff Frank Lloyd Wright did, but you couldn't live in it. But the boldness was able to maneuver U.S. architecture into a new era. Same with some of Louis Kahn's work. It was bold, but not all of it functioned well.

American architecture doesn't lack boldness, it lacks brains. Architects think about how great their artistic ability is, not what the person in the street is going to be comfortable with and what's going to invite them in. And there are some wonderful, great architects out there. But the egos...
—N. Joel Clary, Southern Pines, N.C.

This Month's Question:

Does design review in historic districts restrict creativity?

When architects work in historic districts such as New Orleans' French Quarter or New York City's Greenwich Village, they face a demanding agenda. Local zoning often dictates guidelines for new construction and alterations, not to mention a stringent review process.

Do you think these safeguards in historic districts restrict creativity?
☐ Yes ☐ No

Let us know your opinion:

4256, or E-mail to rivy@mcgraw-hill.com

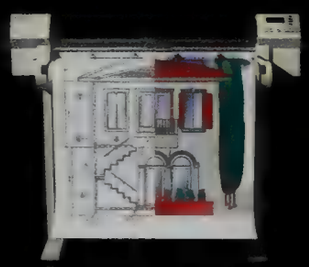
May an editor contact you for further comments? ☐ Yes ☐ No

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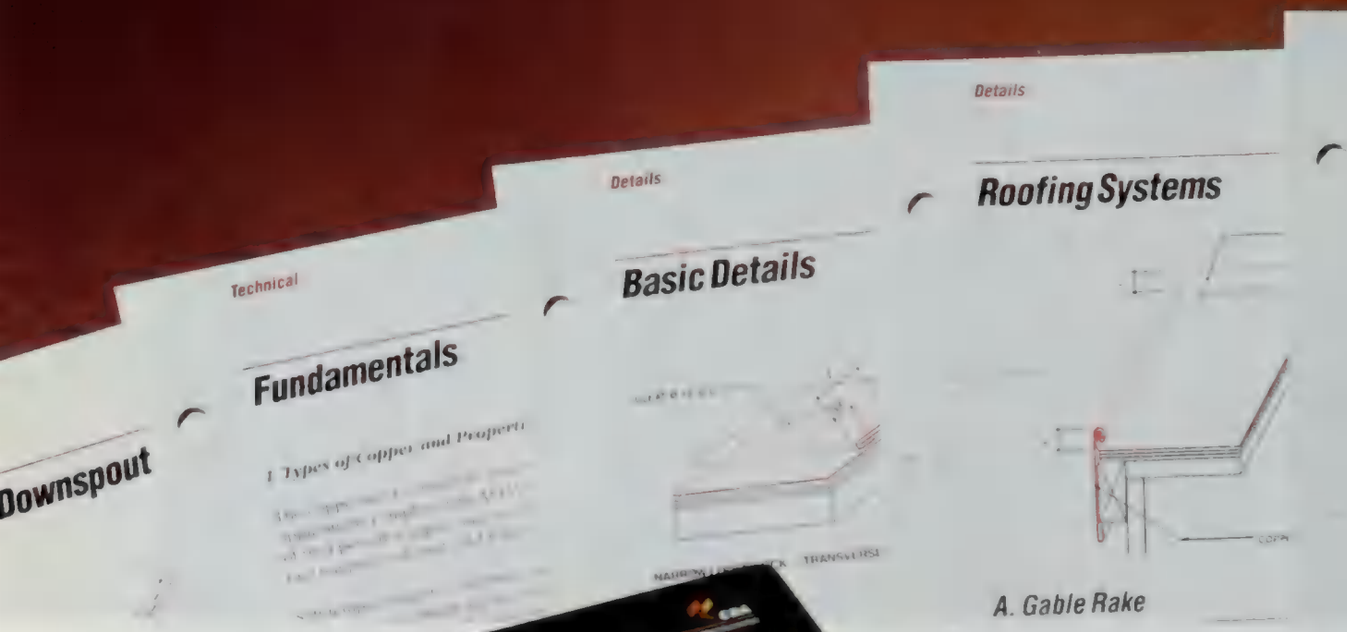
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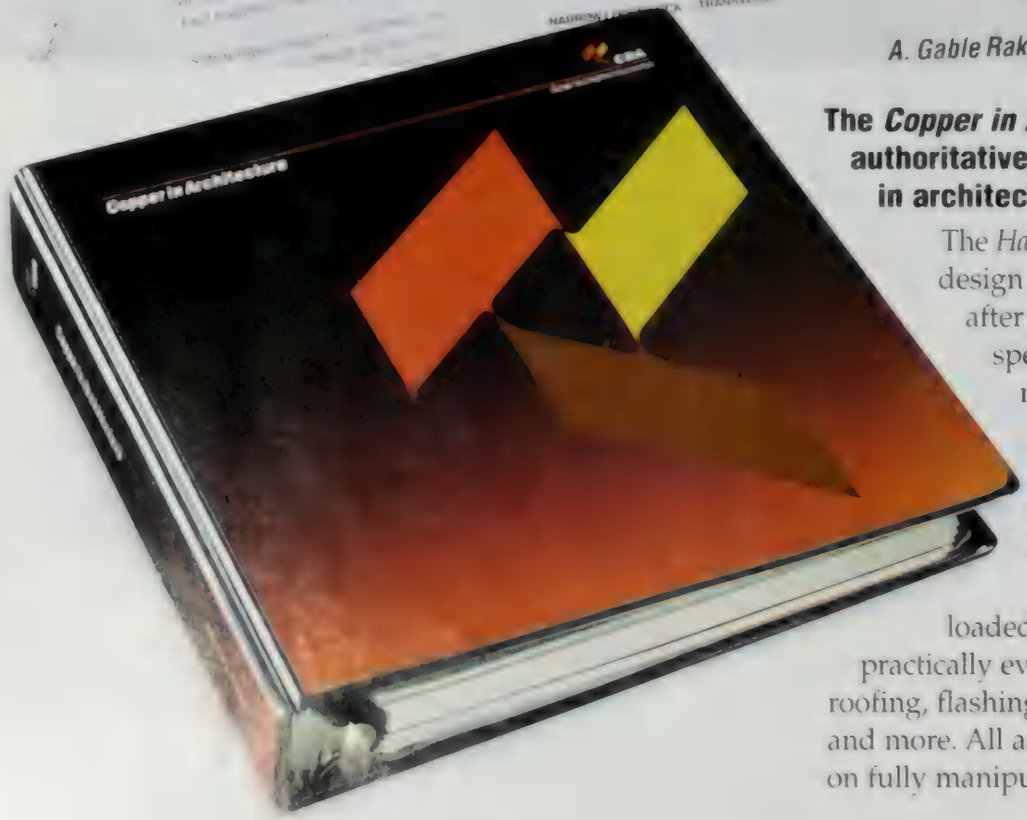
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CIRCLE 14 ON INQUIRY CARD

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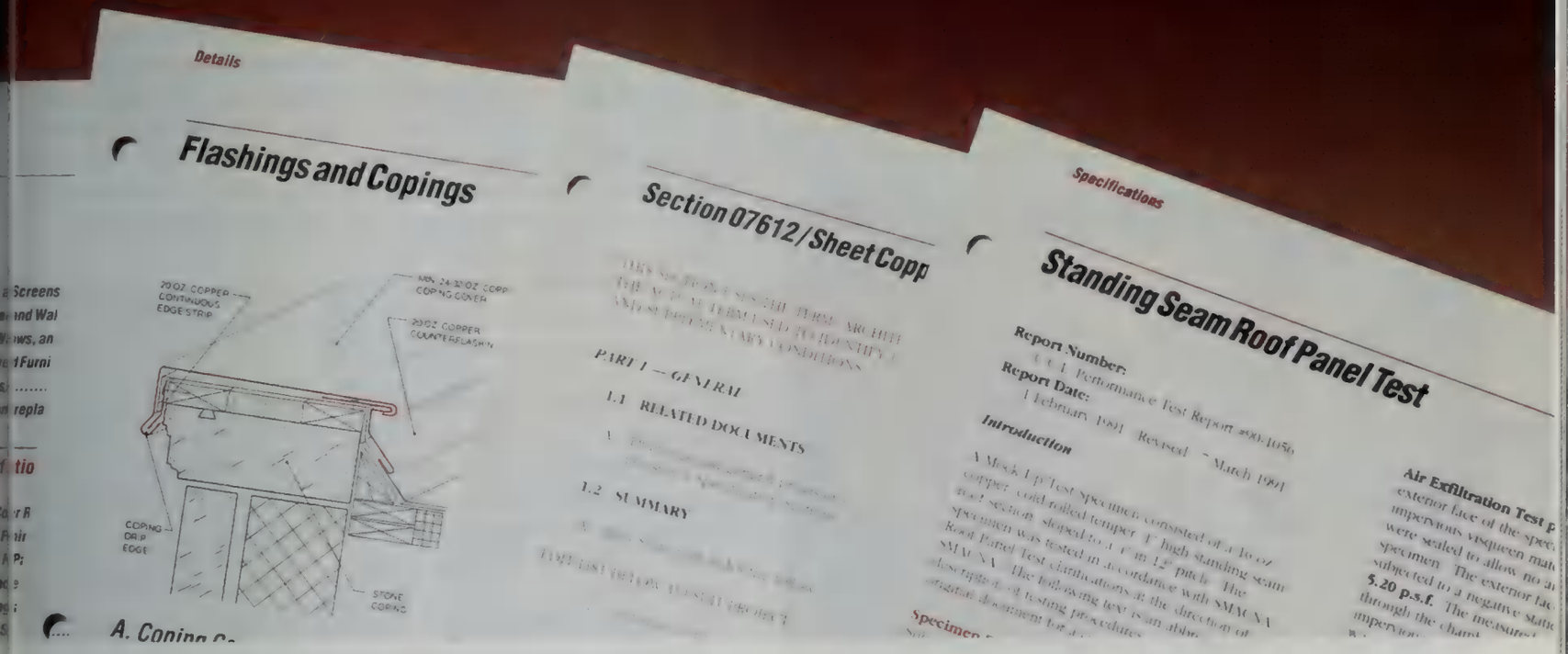
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CIRCLE 15 ON INQUIRY CARD

FUND-RAISERS OPTIMISTIC AS DEADLINE LOOMS FOR DISNEY CONCERT HALL

With only four months to go before a July 1 deadline to raise $52.3 million, fund-raisers for the long-stalled Walt Disney Concert Hall are confident that they'll not only reach their goal, but double it.

Fund-raisers need a total of $150 million in new capital to construct the much-lauded Frank Gehry complex, which is slated to be built atop a $110-million underground parking garage (already financed and built by the county) as part of a downtown Music Center that consists of the Ahmanson Theater, Mark Taper Forum, and Dorothy Chandler Pavilion.



The limestone and titanium-clad concert hall would become the new home for the Los Angeles Philharmonic, which is currently housed in the acoustically poor Dorothy Chandler Pavilion. The July deadline was set by county officials who are frustrated that their investment in the land they donated is as yet undeveloped and fear the project will become forever mired in delays and soaring costs.

The project was nearly scuttled in 1995 when a Gehry-driven deadline went unmet, but the developers were granted an extension after they agreed to step up fundraising efforts. If the goal is reached, the hall will [illegible]

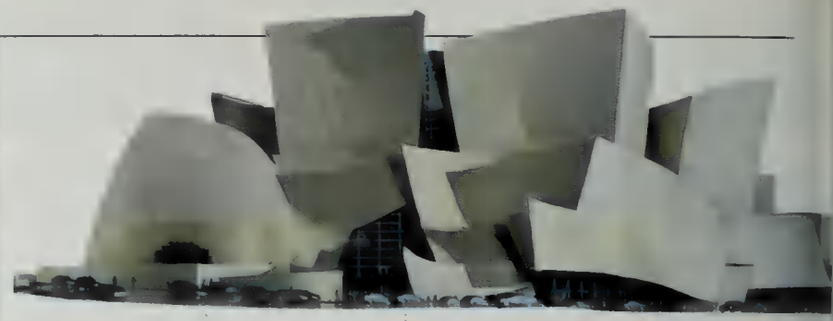
According to the agreement, Disney Hall leaders have to raise roughly $52 million by July 1, $98 million by December 1, and $142 million by June, 1998 before construction can resume.

The original bequest, made by Lillian Disney in 1987 as a memorial to her husband Walt, totaled $50 million. That figure has soared to $103 million, including a subsequent gift of $25 million and accumulated interest.

At presstime, the grand total of contributions and pledges for the remaining $150 million balance was $12.4 million. Recent efforts to find donations have been escalating. Harry Hufford, an investment executive for Bear Stearns, is spearheading the Disney Hall's fundraising committee. Mayor Richard Riordan and millionaire developer Eli Broad have joined forces to seek major donors.

Broad says he intends to personally bring in $100 million in donations by the July 1 deadline. "I view the concert hall as a very important piece of architecture," he told RECORD. "Perhaps on the scale of the Opera House in Sydney or the Guggenheim in New York City. It's extremely important for the city of Los Angeles."

For months there have been rumors of five or six major donors close to making significant contributions, but, according to Music Center Chairwoman Andrea Van de Kamp, there are none that can be confirmed.



One of the donors was rumored to be Eli Broad himself. "I will make a seven-figure contribution at the appropriate time," he said, adding that his contribution is more on the order of working behind the scenes with foundations, corporate sponsors, and other individual philanthropists as a fundraiser. Another rumored angel is Mayor Riordan, a venture capitalist with an estimated $100 million fortune. His spokesman would only say that Riordan may make a contribution "at the appropriate time."

Disney Hall fundraisers remain unfazed by their effort's currently thin bottom line, and are finalizing what Nicholas Goldsborough, the COO of the Music Center, called "a tight business plan" for the end-run of the fund-raising effort.

If the goals are met, ground will be broken in Summer 1998 for a June 2001 opening. The complex will include a 2,380-seat concert hall, a multi-purpose pre-concert foyer, two adjacent amphitheaters, a 120-seat choral theater, and expansive gardens. *Julie Moline*

WHERE THE JOBS ARE FOR ARCHITECTS IN 1997

If you are an architect thinking of making a move, where are the best job markets? According to The Boston Society of Architects's (BSA) seventh annual survey of architectural market conditions, opportunities for architects at all levels abound in Kansas City, Pittsburgh, Denver, Dallas, Boston, Louisiana, Minnesota, and the southwestern portion of Pennsylvania.

The survey was sent to AIA chapters in Fall 1996. Fifty-eight responses from all 50 states were returned. Chapter representatives in 14 cities and states described their market conditions by checking the answer, "We're booming and our firms are desperate for skilled architects at every experience level."

This is the third year in a row that the economic news has improved, reports Richard Fitzgerald, BSA executive director. In 1993, there was not a single region of the country indicated that its local economy was booming.

"The results are encouraging because we're seeing generally improving economies, not the results of bond issues or major new employers," Fitzgerald said.

Areas where highly experienced architects are in particular demand include Wisconsin, Montana, Vermont, North Carolina, Colorado, Tennessee, Los Angeles, Kentucky, Minnesota, South Carolina, Rhode Island, Virginia, Louisiana, St. Louis, Mo., Sacramento, Calif., and Portland, Ore.

On the negative side, areas experiencing a generally "flat" economy for architects include Rhode Island, Illinois, Maine, and Santa Barbara. At the very bottom, pessimistic reports came from Hawaii (particularly Honolulu) and Cleveland.

Overall, Fitzgerald reports, the job market for architects is getting better and better. "It's not a boom," he says, "just nice steady growth. There's not much bad news around."

ARSON DESTROYS FAMOUS BRUCE GOFF HOUSE BUILT FOR JOE PRICE

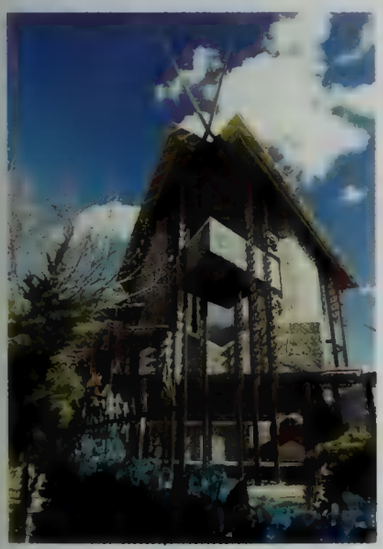
Fire has claimed one of the most prominent works of the late Oklahoma architect Bruce Goff, just as a local group was gearing up for a campaign to restore it. Fire officials say arson was the cause of the late December blaze that destroyed the Shin'enKan house in Bartlesville, Okla. Goff designed the house for pipeline heir Joe Price whose father, Harold Price, Sr., commissioned Frank Lloyd Wright's Price Tower, also in Bartlesville.

"Shin'enKan was certainly the most important house of his later career," said Goff biographer David DeLong. "It was our best record of what he could do if not constricted by a tight budget."

The house was built in three stages of Price's life. Originally constructed in 1955 as a bachelor pad, it was expanded in 1966 for Price's wife; and in 1974 a tower was added containing children's bedrooms. Shin'enKan epitomizes Goff's divergent strain of the organic architecture championed by Wright. It features such unconventional building materials as anthracite coal-bearing walls and goose feather ceilings, as well as Goff's trademark explorations of geometric motifs.

When the Prices left Bartlesville in the early 1980's, they gave the property to the University of Oklahoma. Plans to turn the house into a conference center never materialized. Last year, the university sold the property to a neighboring landowner who had promised to give the house to the Friends of Shin'enKan, a non-profit group organized to restore and maintain the house.

Bartlesville police officials would not comment on their investigation. According to William Creel of Friends of Shin'enKan, it's unlikely that the house will be rebuilt since it was not insured. *Mark Alden Branch*



Goff's Bartlesville house, recently lost to arson, was one of the finest examples of his use of organic forms and natural materials.



ARCHITECTURAL PRESS ROUNDUP

JEWISH ARCHITECTS IN AMERICA

The New York Times, December 15, 1996 "This is a golden age for Jewish architects in America. Is their religion relevant to their art? Yes." This is the subhead for a lengthy discourse by Herbert Muschamp entitled "Architecture of Light and Remembrance." "This art [architecture] has produced an unprecedented flowering of Jewish talent in recent years," Muschamp writes. "A generation ago, Louis I. Kahn stood out not only because of his towering genius but because he worked in a profession largely dominated by the Protestant establishment. Today, Jewish architects lead the field. Besides [Moshe] Safdie, their ranks include Frank Gehry, Richard Meier, Peter Eisenman, Denise Scott Brown, James Ingo Freed, Stanley Tigerman, Robert A.M. Stern, and Eric Owen Moss."

HARSH WORDS FOR THE ARONOFF CENTER

Society of Building Science Educators News, Winter, 1996 Although Philip Johnson claims the Aronoff Center for Design and Art in Cincinnati has "no equal anywhere," not everyone agrees. Academic David Lee Smith writes, "The really frustrating aspect of [Peter] Eisenman's building is that while it is an extremely exciting architectural sculpture, it seems to be a stage set that fails to respond to the needs of its occupants. The mechanical systems ...violate some of the basic premises that I introduce to my students."

THE BEST DESIGN OF 1996?

TIME, December 23, 1996 Three buildings and a book about architecture made the magazine's ten best list for 1996. Heading the field was the Nationale Nederlanden Building in Prague designed by Frank Gehry and Croatian-born architect Vladimir Milunic. *S,M,L,XL*, the squat book about and by Rem Koolhaas came in third. Fourth was the Aronoff Center by Peter Eisenman. The Neurosciences Institute in La Jolla, Calif., by Tod Williams and Billie Tsien finished seventh. By way of comparison, a Calvin Klein dress was second, a woman's shoe was sixth, a cigarette box placed ninth, and the logo for McDonald's Arch Deluxe hamburger came tenth.

BANKS FOR THE MEMORIES

The London Times, November 20, 1996 Vast numbers of stately old banks are disappearing in Britain as architects transform them into pubs, restaurants, and pizza parlors. The reason: with cash machines, telephone and TV banking, the venerable corner bank is no longer needed. In the last five years, Lloyds TSB has disposed of 400 of its 2,800 branches, and NatWest, 1,000 of its 3,000 branches.

PHONE SEX AND ARCHITECTURE

The New Yorker, January 6, 1997 Under the heading, "The Little Apple," critic Witold Rybczynski describes his visit to Las Vegas' newest casino/hotel New York-New York. Designed by Gaskin & Bezanski, it consists of 12 connected towers, including a 47-story facsimile of the Empire State Building, and holds 2,035 rooms. "I have come here assuming that New York-New York is the ultimate Las Vegas folly. Instead I find it oddly affecting," the critic writes. "But as an architect, can I take it seriously?... Although this is a real building—a big real building—it is more like a movie set than like architecture. To paraphrase art critic Robert Hughes, New York-New York is to architecture as telephone sex is to sex." →

A NEW RECORD FOR KUALA LUMPUR? THE WORLD'S LONGEST COMPLEX

As the Petronas Towers in Kuala Lumpur make their mark as the world's tallest buildings, a neighboring site in the same city will soon claim a world record for horizontal space. Designed by Kun Lim, Jimmy Loh, Simon Blore and Jon Ignatowiz of Original Scope Sdn Bhd, Malaysia, and developed by KL Linear City Sdn Bhd, the $2 billion, 8.08-million-sq-ft Kuala Lumpur Linear City (KLLC) will be a 7.4-mile-long complex of shopping centers, hotels, residences, offices, and entertainment, cultural, and recreational facilities in the heart of the capital. When it's finished—somewhere around 2020—Kuala Lumpur Linear City will be the longest, mixed-use complex the world.

KLLC's centerpiece is Giga World, a 1.5-mile, 14-story inverted vault structure. The lower floors will house themed retail malls, and the upper floors will offer shops and restaurants housed in historical structures that recall the famous riverside cities of Paris, London, Venice, and Amsterdam. On the seventh floor, visitors can sail along a man-made indoor river that extends the entire length of the building in electric-powered flat-bottom boats, passing under bridges and alongside landscaped streets. They can then circulate throughout the caterpillar building via elevators, [illegible] moving walkways, escalators, and a 500-meter-long [illegible] on the [illegible] floor.

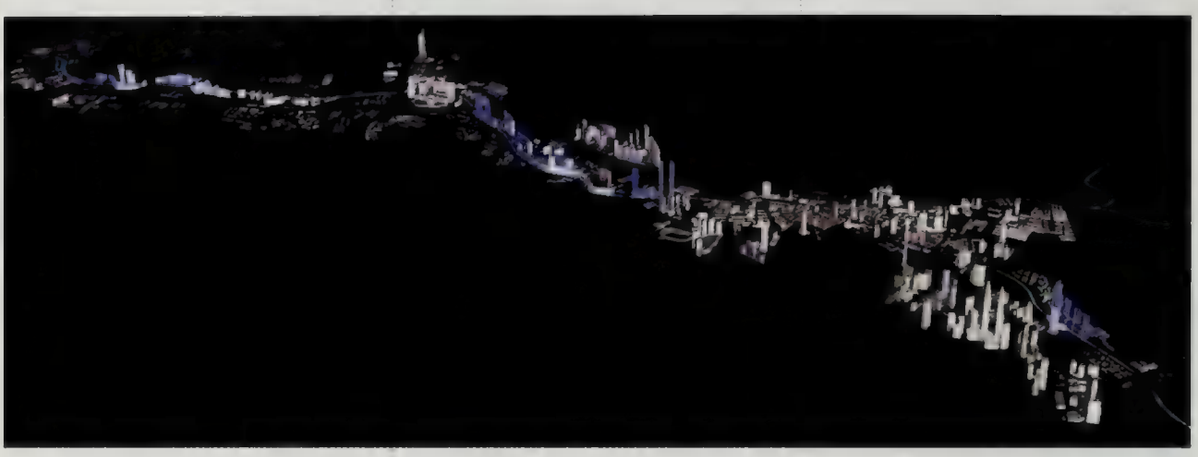
Giga World will also feature a landscaped urban park on the roof, 228 ft above ground, with dramatic views of the city. Four 30-story office towers and four 30-story residential/hotel towers will rise up from the roof with an independent structure and access system. The entire skin of the building will be automatically controlled by sun shades, louvers, and vents, changing the facade's appearance throughout the day and night.

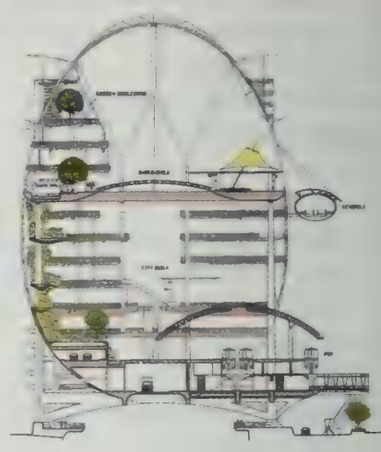
Supporters of the KLLC project hope it will become a world-class tourist destination and expand the city's central business district.

Detractors, including environmentalists, claim that the project threatens the ecosystem of the Klang River, which the complex will straddle. Developers, who intend to spend $80 million to clean up and rehabilitate the river, counter that the project will improve the water quality and rehabilitate aquatic life. KLLC will span the river without intermediate columns that would create interruptions in the water flow. The underbelly of the building, shaped like a hull and painted white, will allow direct and reflected sunlight to reach the water's surface. Developers have also promised to resettle in new modern dwellings the 1,000 squatter families who live along the river banks.

It is also hoped that the complex will help relieve Kuala Lumpur's horrendous traffic congestion by integrating public transportation systems. At the same time, the government is keen to reinforce Kuala Lumpur's "garden city" image by creating an urban leisure destination. "The project is attractive, sophisticated, and extraordinary," Prime Minister Mahathir Mohamad boasted, echoing the developer's claim that the Linear City will be "an urban icon of the 21st century."

Katherine Kai-sun Chia







People will circulate through the caterpillar-like building via a 9.3-mile-long elevated rapid transit system connecting to the city's subway.

MEMBRANE COMPETITION WINNER HELPS TO HEAL YUGOSLAV WAR SCARS

Croatian-born architect Leo Modrcin of New York City has won Japan's Taiyo Kogyo Corporation Membrane Design Competition with a proposal to visually reconnect the Old Bridge of Mostar in Bosnia, which was destroyed during the recent Yugoslav Civil War.

The bridge, built in 1566 by Mimar Hairedin the Younger, in honor of the Turkish ruler Sultan Suleiman the Magnificent, was blown up by Croatian forces in an attempt to divide the city's Croat and Muslim populations.

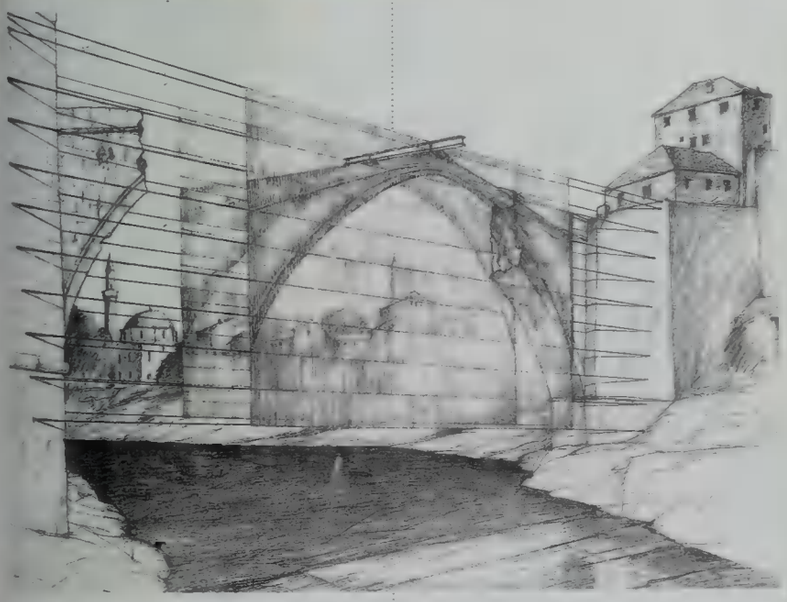
For the competition, titled "The Third Generation Membrane Structure," Modrcin designed a pair of "responsive" screens to span between the remaining ruins as "an architectural membrane to create a visual replacement of the bridge and remind us of the senseless act of its destruction."

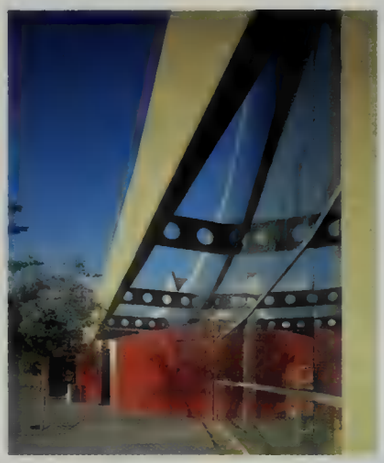
The screens, composed of fiber-optic threads that form large display surfaces, are connected to computer terminals on both sides of the divided city and provide user-friendly opportunities for typed communication between the two sides. When the computers are not in use, the "screen saver" image of the former stone bridge appears. An aluminum girder suspended at the former vortex of the arch forms a structural link in the membrane. The girder also allows local youths to carry on one of Mostar's pre-war traditions: diving into the Neretva River 70 ft below so that they can prove their courage.

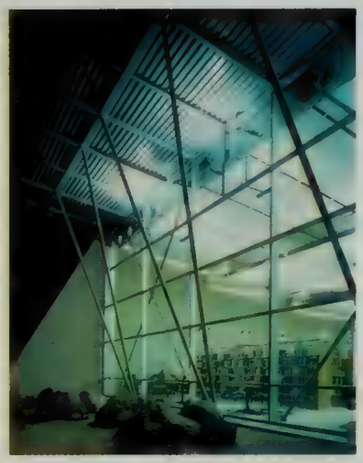
Modrcin's entry was described by the jury chairperson, Professor Mamoru Kawaguchi of Hosei University Japan, as possessing "sharp social sensitivity, abundant poetic sentiment, and excellent technical intuitive power." Other competition prize winners among the 176 entries from 24 countries were Akira Yamanaka, a student at the Architectural Association School of Architecture, U.K., and Martin van der Linden of the Institute of Educational Facilities Architecture, Japan. All winning entries are posted on the Internet at http://www.taiyokogyo.co.jp/compe/96/e_96.html. *Katherine Kai-sun Chia*

A temporary bridge is now in service (below). Modrcin's winning entry in the membrane competition (bottom).









CAN A LIBRARY'S DESIGN ENCOURAGE MORE PEOPLE TO READ?

Is a dramatic new library in Phoenix getting more people to read? Librarians at the Juniper Branch Library think so, claiming that people who stop by to check out the unusual building actually end up checking out more books.

Since its opening in July, 1996, the number of library cards issued at the Juniper Branch has jumped 106 percent over the same period in 1995. The number of books checked out has risen 26 percent.

The new $1.3 million, 14,435-sq-ft facility, designed by Randall Fonce Architects Ltd., Phoenix, replaces a temporary 4,000-sq-ft building across the street. The new building houses 100,000 volumes and offers services for over 30,000 people per month, according to branch manager Susan Jones.

The building is comprised mostly of tilt-up concrete, steel, and glass. Each tilt-up panel is in a different shape and size, creating a unique geometry. The floor plan is split into three parts: the tree-shaded entry court, a central hall holding the library collections and reading stations, and a staff services block that also contains a meeting room. Large expanses of glass windows in the main room invite sunlight, allowing the strong southwestern exposure to provide primarily daylit spaces—and spectacular sunsets.

"It's a striking building, so when people drive by they are now more likely to come in and see us," says Jones. "It's the type of building you'll look at twice." *Danielle Beaugureau*

HAWORTH WINS, STEELCASE LOSES PATENT INFRINGEMENT SUIT **A patent infringement suit filed by Haworth, Inc. against Steelcase, Inc., both office furniture system manufacturers, in November of 1985 has ended with the U.S. District Court for the Western District of Michigan ordering Steelcase to pay Haworth $211.5 million in damages and interest for the 16 years the case and its appeal were pending. The decision and damages are binding and non-appealable.**

The suit focused on the roughly seven million pre-wired modular panels, components in [redacted] office partition system, that Steelcase produced from 1978 to 1994. The case came before the U.S. District Court of Michigan in 1987 and was originally ruled in Steelcase's favor; however, the U.S. Court of Appeals reversed the decision in 1989.

The U.S. District Court also ruled in Haworth's favor on a separate lawsuit filed by Haworth against Steelcase related to computer keyboard shelves. In addition, the court ruled in Haworth's favor in a lawsuit filed by Steelcase against Haworth in April of 1989, which alleged that Haworth infringed on two Steelcase patents on pre-wired panels. →

CHICAGO MAYOR AND ILLINOIS GOVERNOR BATTLE OVER FATE OF CITY PARK

Chicago always seems to be fighting some sort of battle royale over design, but even by the city's typically boisterous standards of debate, the most recent fight was unusual. The fact that it was resolved by a compromise that made both parties happy, was also somewhat unusual.

The combatants, Democratic Mayor Richard M. Daley and Illinois Governor Jim Edgar, a Republican, were quarreling over Daley's desire to turn a tiny lakefront airport, Meigs Field, into a park.

Designed by Teng & Associates of Chicago, the mayor's $27 million plan, if seen through to completion, will transform the 91-acre peninsula occupied by the airport into a park that will complement the activities of three nearby museums: the Field Museum of Natural History, the Shedd Aquarium, and the Adler Planetarium.

Such a step would be in keeping with Daniel Burnham's famed 1909 Plan of Chicago, which envisioned a lakefront primarily reserved for culture and recreation.

Adopting Burnham's vision as his own, Daley closed the general aviation airport on September 30, 1996 when its 50-year lease expired, in hopes of leaving a legacy to the city.

But state and federal courts prevented the city from demolishing the airstrip, which is prized by business executives as a convenient gateway to downtown. The delay allowed Edgar's supporters in the Illinois General Assembly to pass a bill authorizing a state takeover of the airport.

The conflict was resolved in early January, when Edgar and Daley came up with a compromise plan. The airport, they agreed, would be reopened for five years, with the caveat that after that time the City of Chicago's Parks District is free to do whatever it wants with the land. As part of the compromise, the state is permanently enjoined by the courts from interfering with the land in the future.

Daley is up for reelection in 1999. If he is reelected, chances are good that the park will be built as he planned. *Blair Kamen*

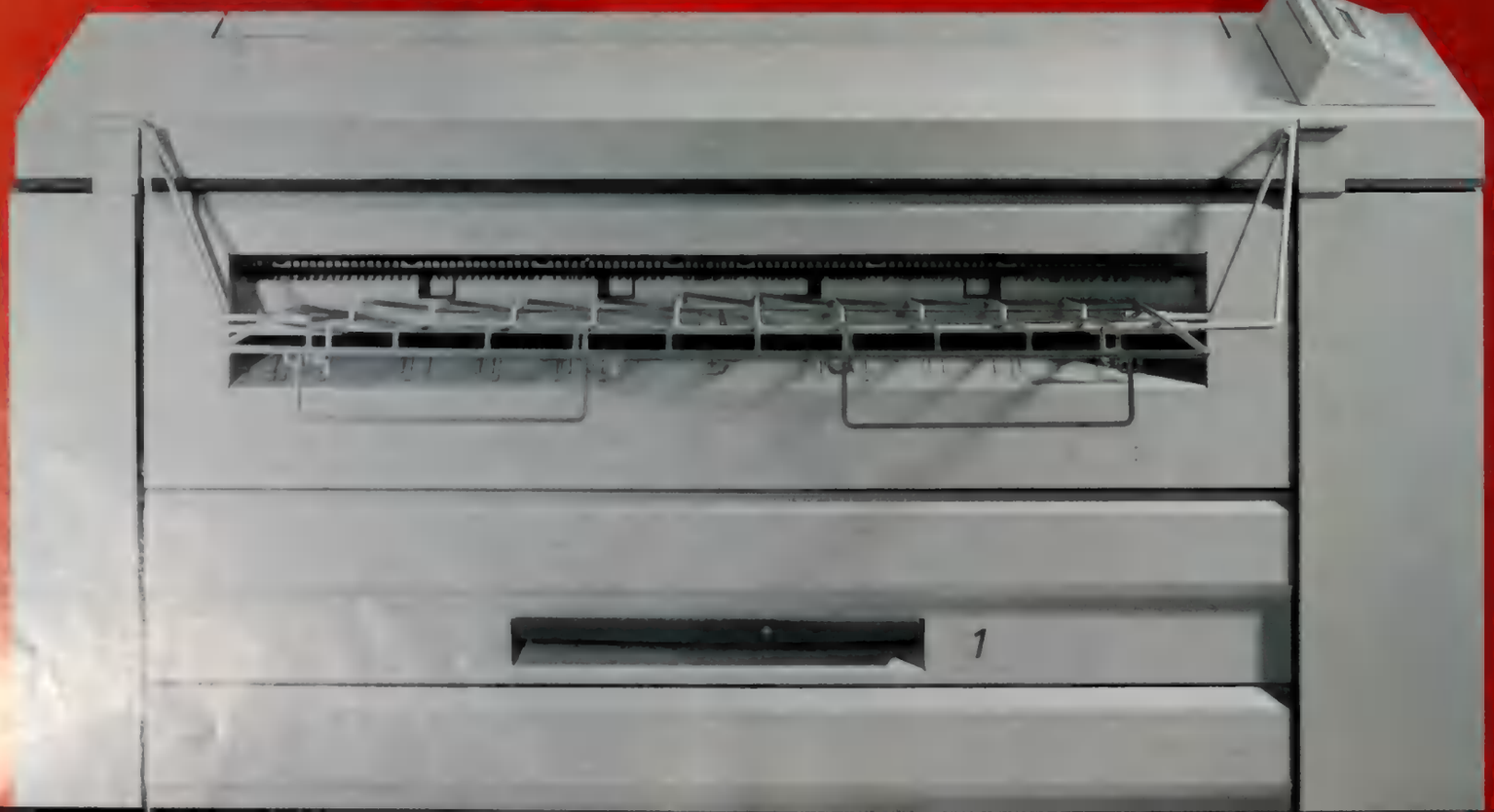
BANANA COMPETITION WINNER ANNOUNCED **The Academy of Architecture, Arts & Sciences's recent Banana Competition held in Beverly Hills, Calif. had nothing to do with monkeys, pratfalls, or Carmen Miranda. Instead, it was a call for entries to design an arts complex in Havana, Cuba, which would include the building of a new opera house adjacent to the old one, as well as, what the competition organizers called "an incredible banana museum."**

First prize in the competition was awarded to Jean Beaudoin of Anik La Brie and Martin Leblanc, Montreal, Canada. Second prize went to Nancy Lelieur of Scott Lelieur, Los Angeles, while third prize went to Magdaleine Vratsikidou of Jin Taria Alonso and Titus Spree, Tokyo.

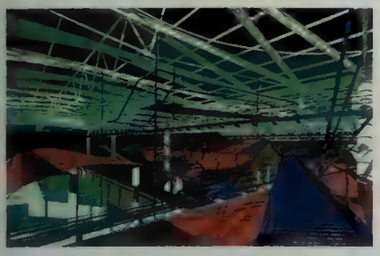
The winning entry, "Skindeep," proposed four urban theaters that would be "morphed" with the existing opera house. The old opera house would become the backdrop for the new opera house's outdoor performance hall. As for the banana museum, it took on secondary importance by the architects and, apparently, the jury.



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TSCHUMI DESIGNS FRENCH ART CENTER



Bernard Tschumi Architects has just completed the design of the 9,600-sq-yd international center for contemporary arts that will be "inserted" into Le Fresnoy, a 1920's leisure complex that includes a cinema, ballroom, skating rink, stables, and other facilities in Tourcoing, France, near Lille.

The new complex includes a school, film studio, "mediatheque" [media library], exhibition halls, two cinemas, production and research laboratories, offices, housing, and a bar/restaurant.

Tschumi describes the project, officially called the Le Fresnoy National Studio for Contemporary Arts, as a "succession of boxes inside a box." Corrugated steel facades to the north and curtain wall facades to the south provide a contemporary transparent image to the entrance area and the main facade of the building.

A large landscaped terrace near the new bar/restaurant is linked, through a grand staircase, to an outdoor garden. The space between the new steel roof and the old tile roofs is mediated by large horizontal windows covered with transparent sheets of polycarbonate shaped like clouds.

"The interstitial space between the new and old roofs becomes a place of fantasies and experiments," said Tschumi, referring to the possibilities of using the space for film and performance. "The in-between becomes a condenser of interdisciplinary investigations between teaching and research, art and cinema, music and image." *Katherine Kai-sun Chia*

PATKAU ARCHITECTS WINS $55 MILLION U. OF TEXAS NURSING BUILDING



Patkau Architects of Vancouver, B.C. has won the design competition for the University of Texas at Houston's Nursing and Biomedical Sciences Building. The $55 million project will be the final component in an eight-unit health science complex that also includes a dental school, graduate school of biomedical sciences, school of public health, medical school, school of nursing, school of allied health sciences, and the Harris County Psychiatric Center. Following fund-raising efforts, the university expects groundbreaking in five years.

The competition, the first of its kind by the university system, sought out "young firms willing to push the envelope in terms of design," according to Rives Taylor AIA, who designed the competition for UT. The challenge was to design a building "that would combine versatility with cutting-edge technology, ensuring the building as a landmark 20, 50, even 100 years from now," Taylor said.

"The competition was unusual because there were very few constraints—the most significant relating to neighboring Grant Fay Park, the last open green space in the Texas Medical Center. All participants in the competition—Enrique Norten, Lake/Flato, Machado Silvetti, Tod Williams Billie Tsien, and Steven Holl—responded "with forward-thinking entries that were smart, healthful, sustainable, and responsive to matters of security and environmental concerns," Taylor said. *Julie Moline* →

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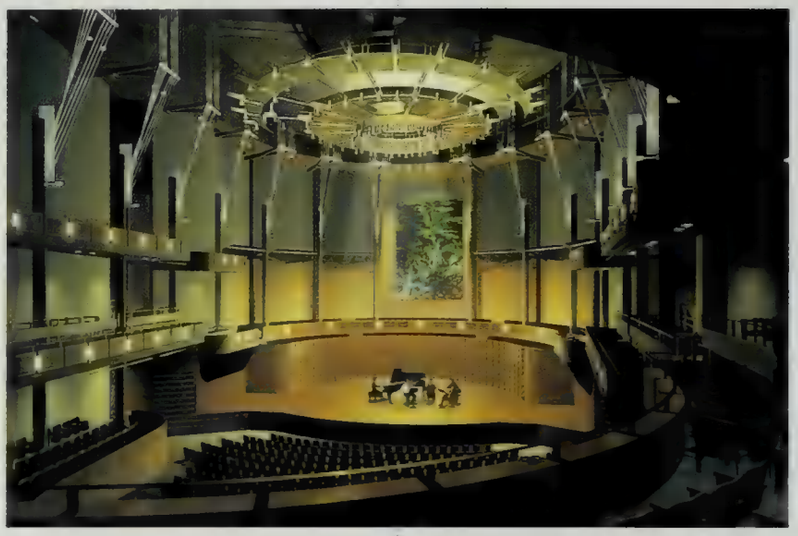
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CIRCLE 16 ON INQUIRY CARD

NEWS BRIEFS

NCARB launches computer-based exam NCARB's computer-administered Architect Registration Examination went on line in January at 215 test centers in the U.S. and Canada. The computer technology will allow the 17,000 annual test takers to schedule any division of the exam at a time and place convenient to their schedules. The nine-division examination will be completely administered and scored on computer. One feature of the computer mastery test format is that candidates who are clearly passing or clearing failing will not have to continue taking the test to its conclusion. More information about the exam is available on the NCARB web site at http://.ncarb.org

U. of British Columbia's arts center nears completion Bing Thom Architects, Inc. of Vancouver is completing construction on the



The Chan Centre for the Performing Arts at the U. of British Columbia.

$23-million 77,000-sq-ft Chan Centre for the Performing Arts at the University of British Columbia. The complex includes a 1,400-seat main concert hall, designed like a musical instrument with the audience seated inside the reverberation chamber; a 252-seat flexible studio theater with three levels of moveable seating towers, and a multi-purpose, 158-seat cinema. All are linked by a two-story glass lobby and outdoor patios with panoramic views. The zinc-clad center will open in March 1997.

Kemper Award to RTKL's Harold Adams Harold L. Adams, FAIA, associates chairman and president of RTKL in Baltimore, Md., is the 1997 recipient of the Edward C. Kemper Award. The founder and chair of the AIA's Large Firm Roundtable, Adams is also a member of the Maryland Economic Development Commission, and state chair of the World Trade Center Institute. The Kemper Award recognizes contributions to the AIA and the profession of architecture.

RECORD launches web site ARCHITECTURAL RECORD is launching a World Wide Web site this month, architecturalrecord.com. According to Senior Editor James S. Russell, "Architectural Record Online will offer access to a world of information not found elsewhere It also provides a forum for members of the design community to not just respond to stories published in either print or electronic versions, but to pose issues and questions." The RECORD online will also offer career opportunities and "links, links, links," he added. The site is free and requires no password or registration.



CIRCLE 17 ON INQUIRY CARD

AIA Thomas Jefferson Award winners An architect and two urban planners have been selected to receive the American Institute of Architects' 1997 Thomas Jefferson Award for Public Architecture. The winners were Richard A. Kahan, founder and president of The Urban Assembly, New York City; John Tarantino, AIA, chief architect of the Department of Capital Program Management for the New York City Transit Authority; and Hunter Morrison, director of Cleveland City Planning Commission. The awards, which will be conferred in May at the AIA's national convention in New Orleans, are presented each year to recognize excellence in architectural advocacy and achievement in the public sector.

President Clinton nominates Architect of Capitol President Bill Clinton has nominated Alan M. Hantman, a long-time Rockefeller Center Management Corp. official, to be Architect of the Capitol. In nominating Hantman on January 7, Clinton is following the recommendation of a congressional commission, which in September named Hantman its top choice for the post.

Six grants for S. California Institute of Architecture The Southern California Institute of Architecture (SCI-Arc) has received grants from six different foundations in order to restore and edit its video archives of 25 years of lectures given by noted architects, artists, and creative thinkers; produce Urbarte, a Spanish/English publication focusing on socio-cultural and architectural issues related to the Los Angeles Latino communities; and support projects by members of SCI-Arc to produce publications through the Public Access Press.

Architectural historian Carl W. Condit dies Carl W. Condit, a widely recognized authority on the history of engineering and architecture, died last month at age 82. An emeritus professor of art history at Northwestern University, where he taught for 35 years, Condit combined technical expertise with the sensibility of a humanist, consistently showing how architecture is a bridge between technology and art.



New W.W. II monument as envisioned at the east end of the reflecting pool.

World War II monument winner announced Friedrich St. Florian, former dean of the Rhode Island School of Design, was awarded first place in the competition to design a World World II monument in Washington, D.C. His plan was selected from among six finalists from 400 entrants [RECORD, October 1996, page 17] by the American Battle Monuments Commission.

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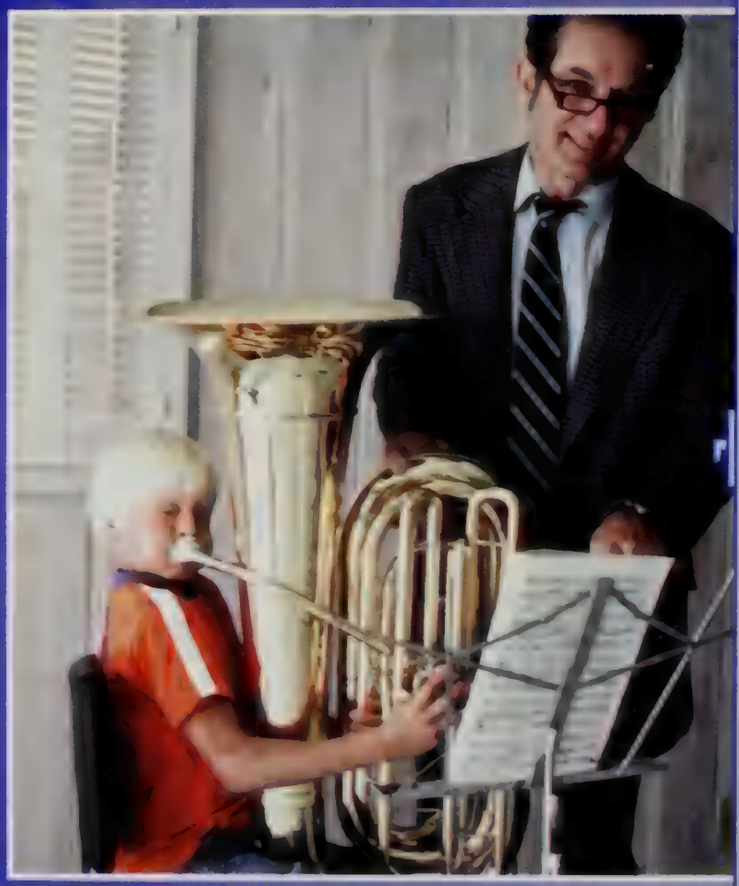
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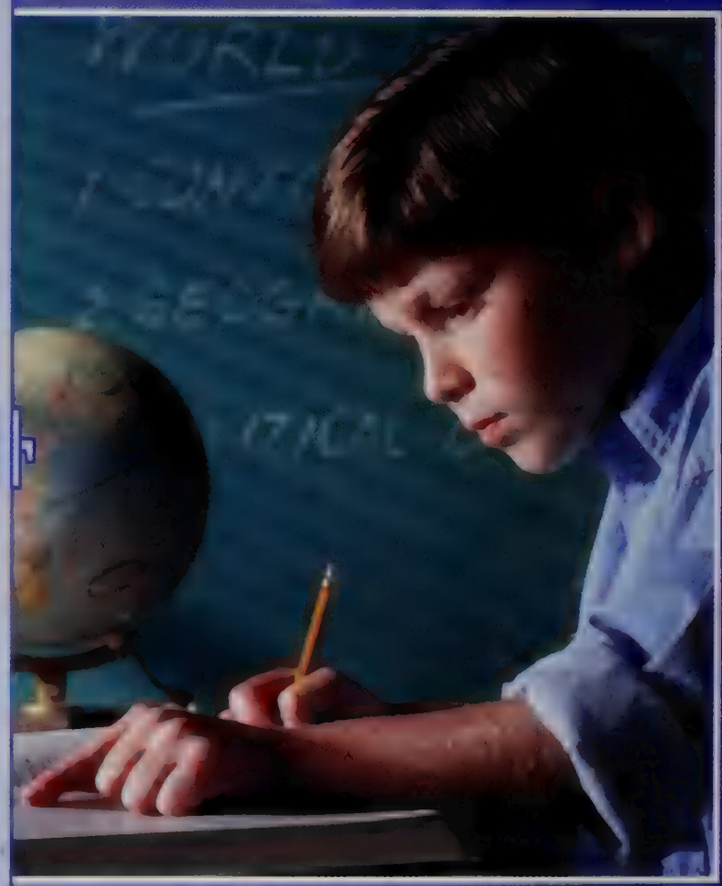


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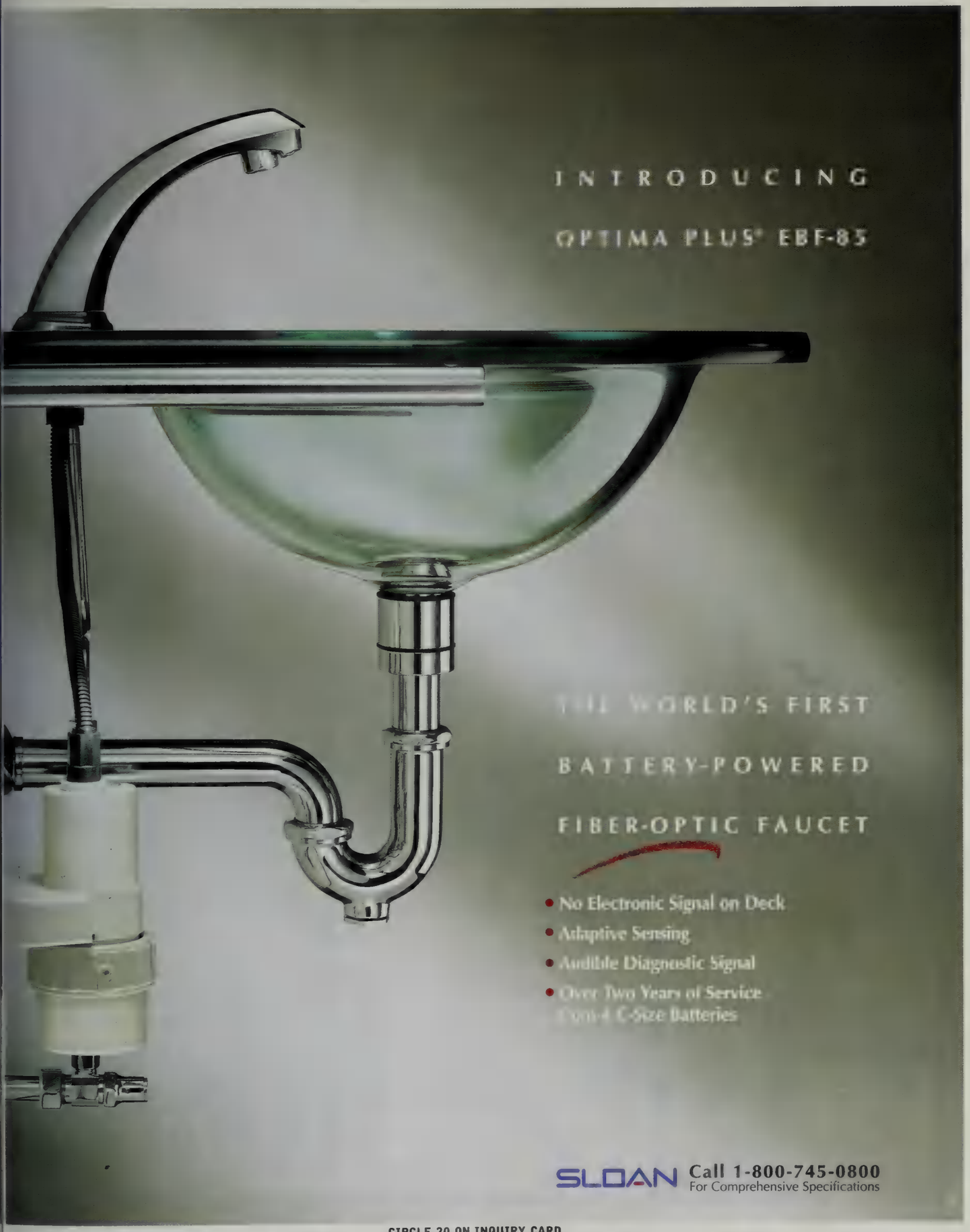
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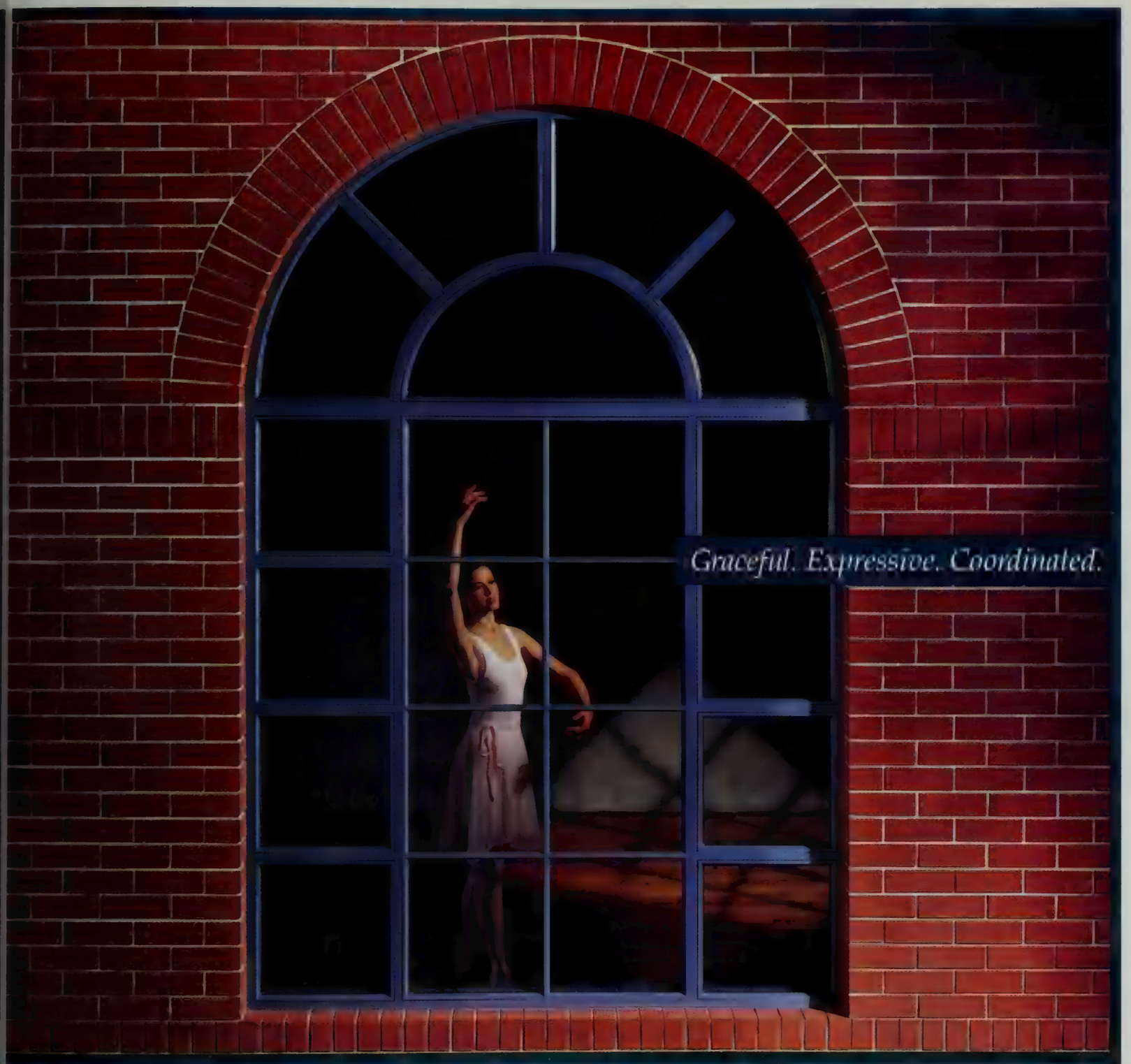
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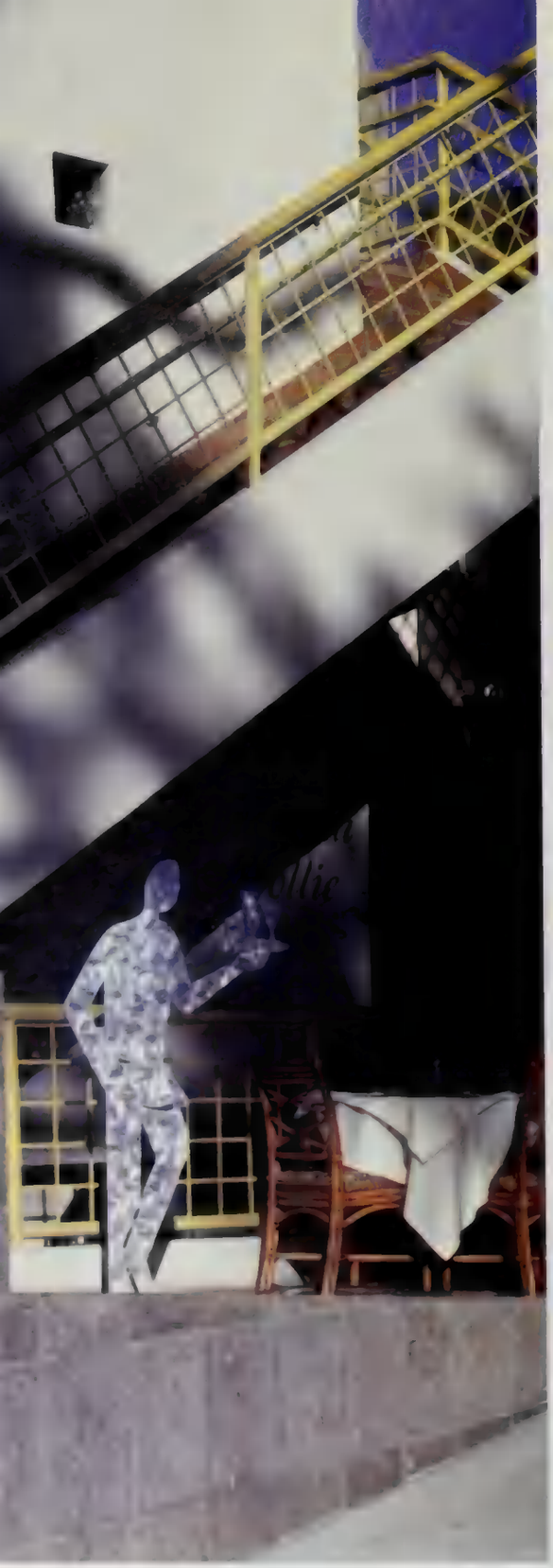
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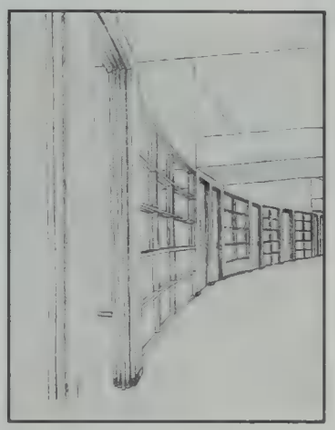


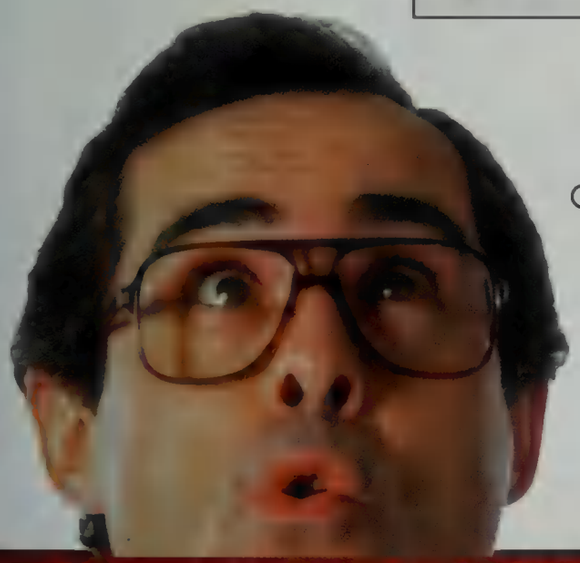
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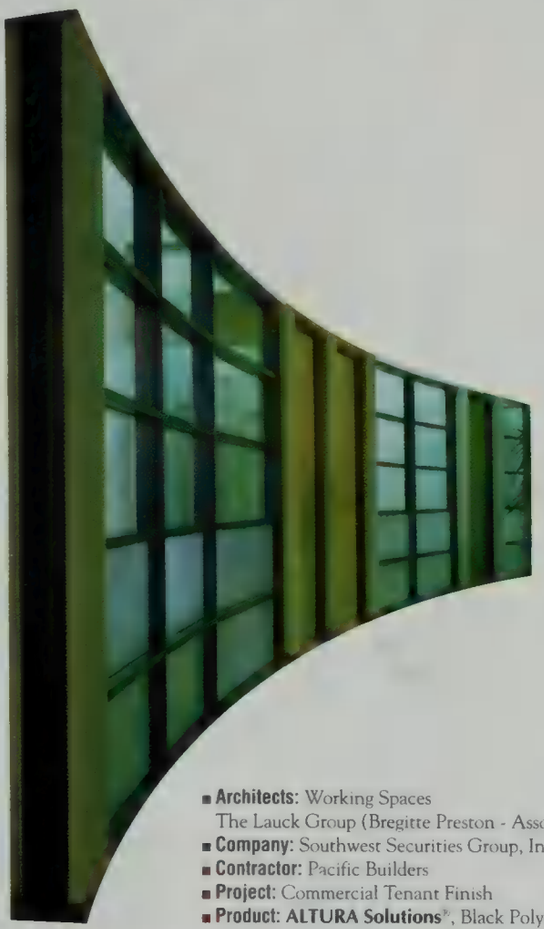
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CIRCLE 25 ON INQUIRY CARD



CRITICISM: Eric Moss's SAMITAUR BUILDING, his latest project in the Culver City section of Los Angeles, plays against type.



Eric Moss (left) has a contemporary patron in developers Frederick and Laurie Smith. This project, his first design for them, isn't the first to be built.

by Suzanne Stephens

The name of the Samitaur Building in Los Angeles sounds almost as if it is a play on the word "centaur," the mythic half-horse, half-man that gamboled around the mountains of ancient Greece. While Samitaur is actually the family name of the developers, Fred and Laurie Samitaur Smith, the association with the centaur turns out to be quite apt. In many ways, this office building, designed by Eric Owen Moss, FAIA, for an industrial site in South Central Los Angeles, is a hybrid. It is a hybrid of old, squat, remodeled industrial buildings and new construction raised on columns. It is a hybrid of structural technologies, where lightweight stucco over a wood frame is combined with heavy-duty steel construction. It is a hybrid of a rational orthogonal plan and highly sculptural volumes of stairs and outdoor gathering areas. On an urban level, the Samitaur Building is a hybrid of a pure, isolated architectural form and the continuously amorphous sprawl to which it belongs. Half-architecture, half-edge-city, it suggests a way architects and developers can effectively inject design into the hopeless effluvia of warehouses and manufacturing facilities ringing urban centers.

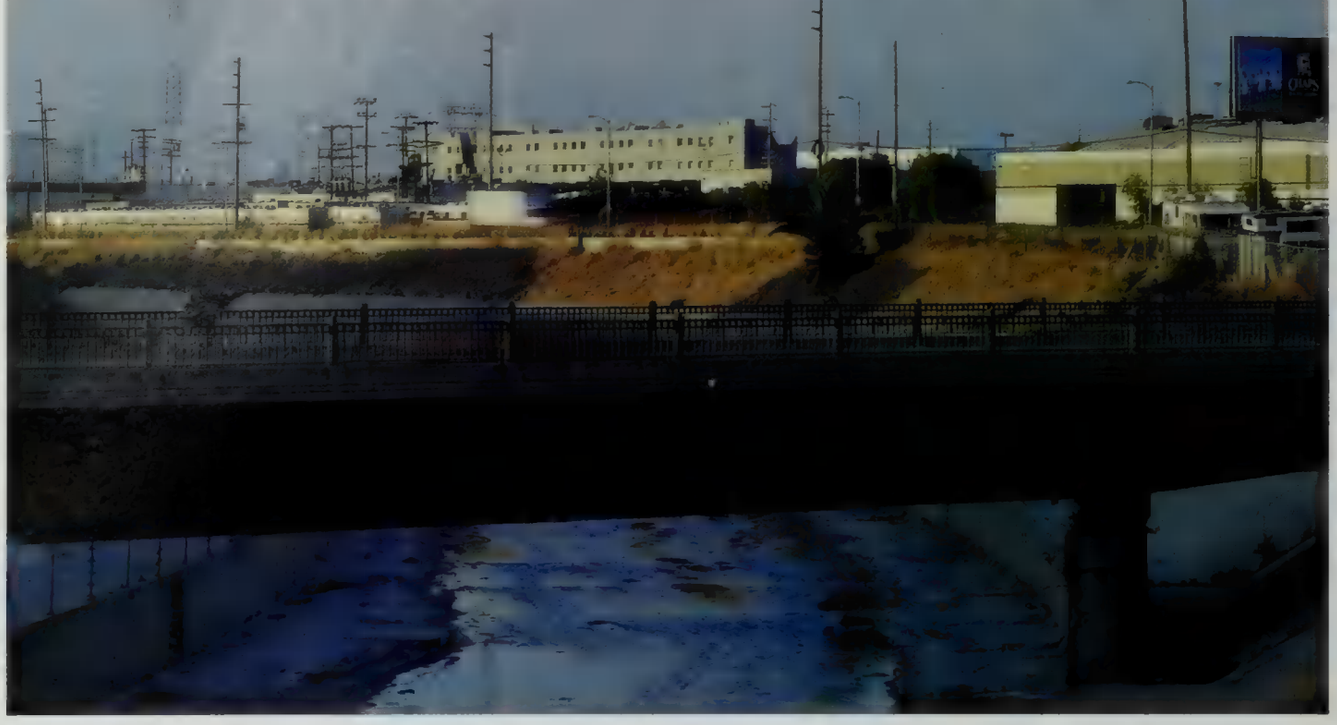
The elongated office structure is only one of a number of projects Fred and Laurie Smith have built or renovated in and near Culver City over the last 10 years. Their choice of Moss to design this complex, and some 20 other separate projects, is now a well-known success story [RECORD, July 1994, pages 62-69]. The results, totaling $20 million for about 320,000 sq ft of completed construction, have not only transformed a dilapidated urban area, but won many awards, including the AIA Honor Award in 1990 for the renovated 8522 National Building in Culver City.

Suzanne Stephens is a contributor to Architectural Digest. *She has also written for* The New York Times *and is former editor of* Oculus, *the publication of the AIA's New York chapter. She is currently pursuing a doctorate in architectural history at Cornell University.*

This most recent endeavor, which is now being occupied, is located where the 1992 riots took place following the Rodney King verdict. Amid a group of low-rise sheds and parking lots, the Samitaur Building is down the block from See's Candies, which was looted during the riots, and near a 7-11 store that was set on fire. "Our neighbors who own factories and warehouses have been leaving the city," says Fred Smith. "Our ambition was to stabilize the neighborhood."

The idea for the structure dates back to 1989, when the Smiths asked Moss to renovate the interior of a rundown sawtooth-gabled industrial building near Corbett Street and Jefferson Boulevard. Moss came up with a scheme that called for a new 320-ft-long, boxcar-like building to be raised on columns over an existing privately-owned truck road adjoining the sawtooth-gabled building, and wedged between a brick structure to the east and an aluminum shed to the west. The rationale for the elevated building was that it left open space at grade where the trucks serving the light industrial businesses in this complex could load and unload their wares. To do so meant that the office block had to be jacked up almost 21 feet off the ground to allow trucks a 14 1/2 ft clearance plus another six feet for supporting girders. Furthermore, the building has to stay within a 48-ft height limit, so that its two stories had 10 1/2 ft floor-to-floor dimensions, and lowish nine-ft floor-to-ceiling heights. Also, fire regulations kept the floors of the office space the same 30-ft width as the road,

Project: *Cineon Kodak at Samitaur, Los Angeles*
Owners: *Frederick and Laurie Samitaur Smith*
Architect: *Eric Owen Moss Architects—Eric Owen Moss, FAIA, principal-in-charge; Jay Vanos, Dennis Ige, AIA, project architects; Mark Prezkop, AIA, Todd Conversano, Greg Baker, John Bencher, David Wick, Eric Holmquist, Paul Groh, Naoto Sekiguchi, Ravindran Kodalur Subramanian, Scott Nakao, Elissa Scrafano, Scott Hunter, Sophie Harvey, Sheng Yuan-Hwang, Isabel Duvivier, Carol Hove, Karin Mahle, Daryusch Sepehr, Ann Bergren, Jennifer Rakow, Amanda Hyde, Lucas Rios, Eduoardo Sabater, Janek Tabencki Dombrowa, Leticia S. Lau, Erik Hohberger, Julia Burbach, project team*
Engineers: *Kurily, Szymanski, and Tchirkow—Joe Kurily (structural); I&N Consulting Engineers—Paul Antieri, Paul Immerman (mechanical/electrical)*
Consultant: *Saul Goldin and Associates (lighting)*
Metal Fabrication: *Tom Farrage & Company*
General Contractor: *Samitaur Constructs—Peter Brown, director of field operations; Tim Brown, superintendent*



The 320-ft-long boxcar-like building spans parking lot to parking lot, jacked up on steel girders over a roadway. It is only a piece of the developers' long term plan for transforming the urban wasteland of sections of Culver City/South Central Los Angeles into desirable addresses for creative enterprises.

"WHILE THE SALK INSTITUTE HAS A VIEW TO THE SEA, OUR VIEW IS A SEA OF INDUSTRIAL SLUDGE."

since the fire department didn't want to see that long a structure extend laterally over other buildings.

By the 1992 riots, the developers had put the project on hold, while other buildings took priority. Few architects and clients would ever expect the project to re-emerge from this limbo, simply because businesses were quickly exiting the area. Then there was the design itself. The ambitiousness of the highly structural scheme might seem destined only for avant-garde architectural exhibitions of unbuilt projects.

Yet the Smiths were receptive to the scheme. "Both of the Smiths are interested in possibilities allowed by design," says Moss. "They wanted to see how the city could grow without ripping apart all that had preceded it." They already knew from the Culver City experience that new and renovated construction, rising from a nebulous surround, could galvanize the area with economic activity. Moss saw his efforts as posing an alternative to "New Urbanism," which creates traditional small towns, on one hand, and to the Deconstructivist notion of inserting a deracinating form in an urban fabric, on the other. Although his work might tie him more closely to the latter group, Moss points out the difference: "I like to put contradictions into architecture, but then have something resolved."

In 1994 the developers decided to go ahead and build Moss's design on the property they already owned, even if the banks were not behind them. "We couldn't get construction loans, and so had to use our own money," says Fred Smith. By this time too, the leasing market had changed enough so that trucks no longer seemed so integral to the new complex. The information and communications sector of the economy was supplanting light manufacturing in Culver City and the nearby environs. Under these circumstances one might expect the long box-like building to be lowered to the ground, where it would be less expensive to [illegible]. "A lot of people were surprised when the original elevated scheme [illegible]," says Moss. "The Smiths didn't have to be convinced, however. [illegible] and architecture fit into the strategy."

[illegible] was definitely part of that strategy. Since [illegible] buildings are one- and two-stories high, the Samitaur, at 45 ft, functions as an important visual icon. Its elevated profile and the sculptural circulation pieces, plus its greenish hue make it identifiable on the horizon. On the ground, the open area under the new structure has created a common pedestrian space—itself a hybrid between the underside of a bridge and a shopping arcade. "Let's call it the Champs Elysée of South Central L.A," jokes Moss.

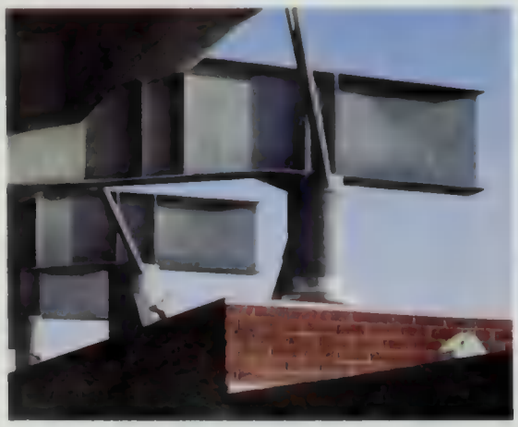
The greenish-hued stucco covering the wood-framed bar of office space is tinged with brown and gray. "The objective was to make a color you can't quite define," says Moss. The stucco in turn is gridded with aluminum strips that indicate expansion joints while giving the long boxcar shape a more intimate scale. In contrast to the skin-tight stucco on wood planes enclosing the office building itself are the massive structural components supporting it. Where the longitudinal building juts out over an existing truck drive below, it is carried on round steel columns 18 inches and 24 inches in diameter. The columns, with a zinc patina finish, are spaced at irregular intervals, and support steel girders tapered in depth according to different spans. "While the girder is structural, its actual shape is not," admits Moss. "The girders dance around."

Not even the stiffeners for the girders are aligned in a regular arrangement, but are placed in a syncopation that responds to the girders' varying loads and spans. Diagonal bracing for the building has been inserted within the existing brick structure on the west side of the complex, which houses rental space as well. Additional steel frames, needed to comply with earthquake codes, were installed along the transverse section of the new office building. "Structure is a very big word," explains Moss. "In this case, it's not just about holding something up." *(text continues)*



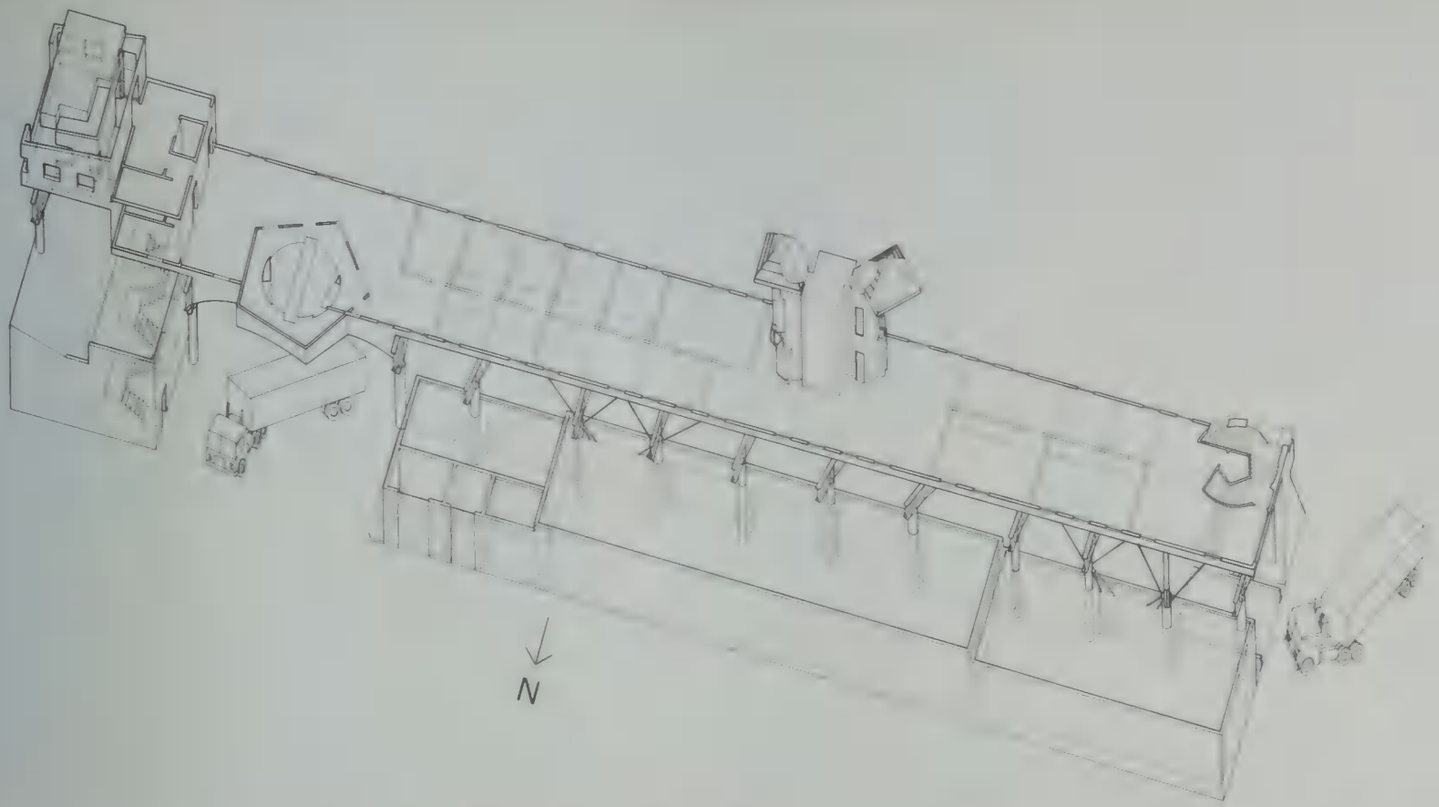






Greenish stucco covers the wood-framed exterior. A grid of aluminum expansion joints breaks down the massive scale of the elongated rectangular form as do rows of [illegible] right). Structural support is provided by a system of tapered steel columns braced by diagonal members (above). An existing one-story brick shed, at the east end of the complex, was remodeled.




N



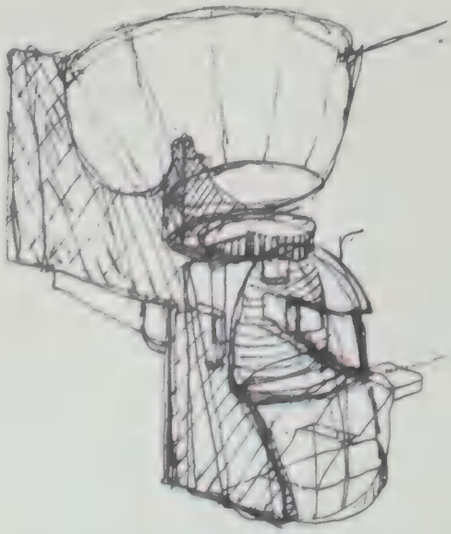


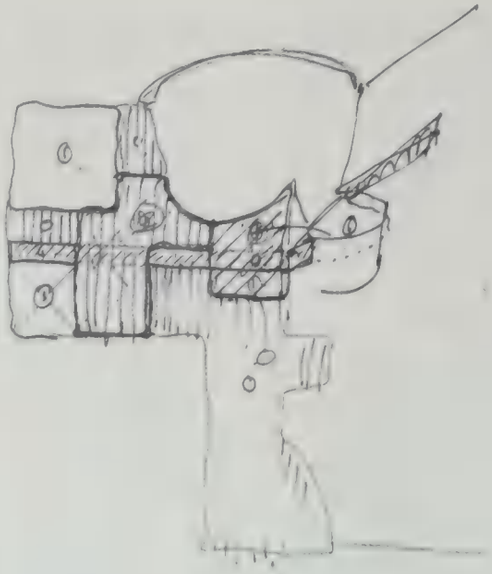
Moss's interest in overlapping geometries is revealed in the outdoor courtyard, which is suspended over the truckway to mark a secondary entrance to the office complex (opposite). The two-story space is a modified pentagon (below), with a staircase leading up to a viewing platform (right), a bridge, and a fountain. The space is crossed overhead by wood beams.



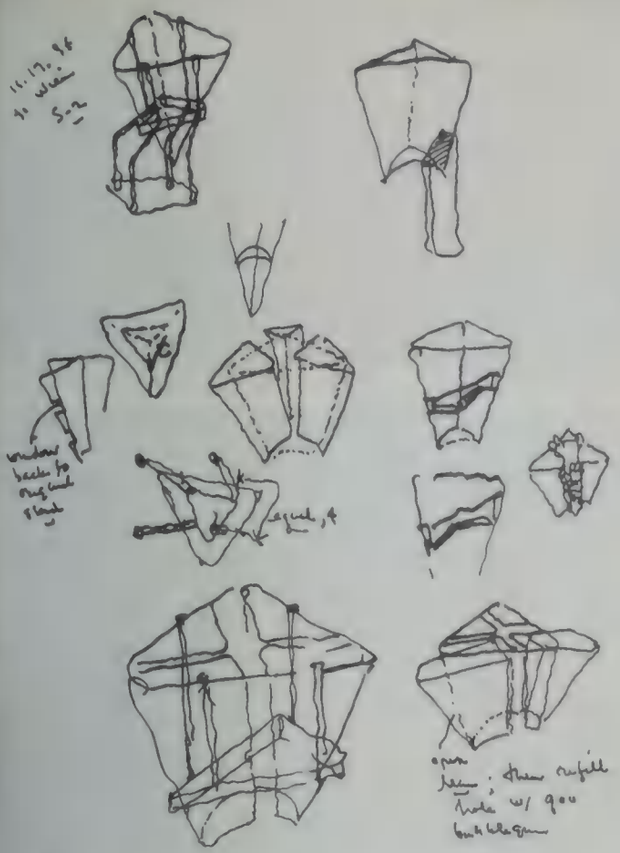


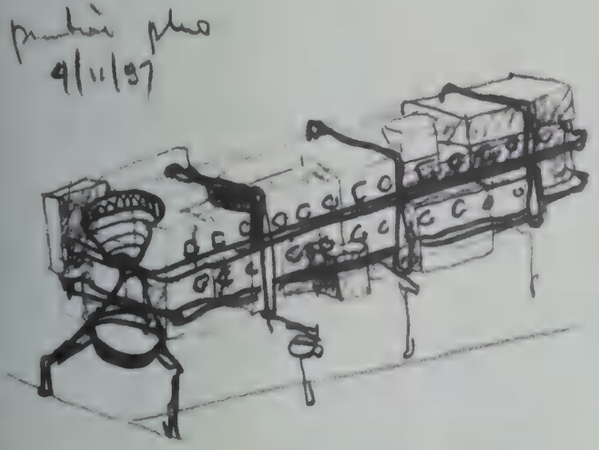


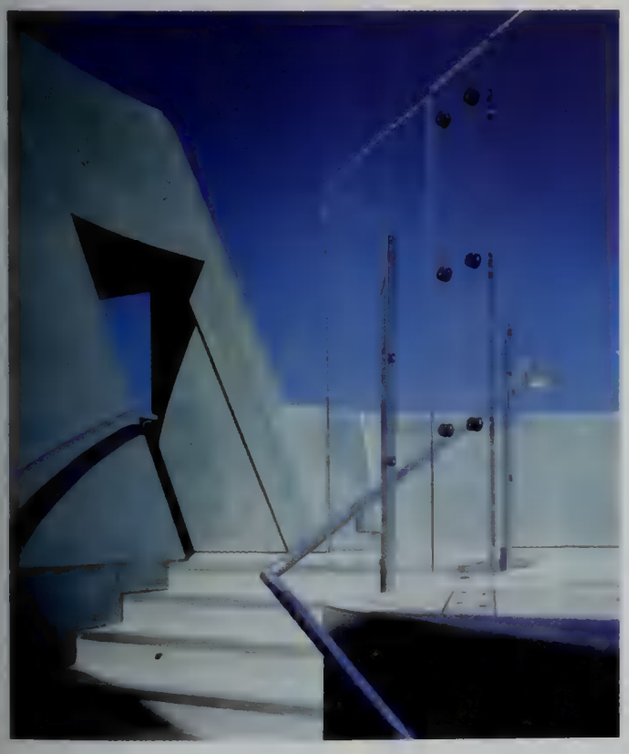




Moss's early sketches for the Samitaur Building (opposite), show that the built result remains consistent with his initial response: use the air rights over an existing roadway for additional leasable tenant space. At the main entrance to the complex, Moss designed an entry piece with a stair inside, which he has described as "variously a cone, a cylinder, a pumpkin."









PERSPECTIVE

A Word from One Developer about Architects Fred and Laurie Samitaur Smith are not the stereotypical bottom-line-only developer. Although Fred Smith has been involved in real estate development in the Los Angeles area for the last 25 years, in the 1960's he was a writer, journalist, and poet living in Europe. His wife, Laurie, is a former actress who is active in various conservation and preservation organizations along with being a developer. Their vision for Culver City and the industrial section of the west side of Los Angeles also goes against type. Over the last decade the two, with their company Samitaur Constructs, have been converting properties totalling 15 acres or 700,000 sq ft to new uses. During this time, with Eric Owen Moss as their architect, the Smiths have transformed industrial buildings and warehouses into offices and work space for film and entertainment people, designers, computer entrepreneurs, dancers, and artisans. Accordingly, they named their entire assemblage of buildings "Conjunctive Points," after the physics term for the point at which energy in a sub-particle space emerges into three-dimensional space. While the Samitaur building is now being occupied, the Smiths and Moss are completing the Pittard Sullivan Building, part of a piece of land in Culver City they own called the Hayden Tract. A number of other projects await.

Fred Smith: "After I returned from Europe in the 1960's, I went to business school, and during that time began to build facilities for computer people. Silicon Valley was just taking shape; then practically everyone in northern California was working out of garages. I soon realized that the higher thinking involved in computer design was not matched by the architecture of the buildings. I wanted to build offices that reflected the dynamic problem-solving going on inside, and so I began reading about the new math. When I thought I had an amateur comprehension of it, I began to approach architects to design buildings that showed this thinking.

"These architects rejected me. They weren't used to working in that manner with clients. They had their way of doing things and couldn't compromise. There were no open minds. I then sought out shopping center architects, because I thought they would have more imagination. But their minds were closed too.

"Around 1988 Eric [Moss] became a new tenant in one of my buildings in Culver City. I hadn't heard of him at the time, and I went in to collect the rent. We started talking about T.S. Eliot's 'Quartets.' I thought if I could explain my ideas through artistic and literary references, I might communicate. I was right. He was able to magnify my dreams—and they were dreams at the time. We started with 8522 National Boulevard in Culver City and then 3960 Ince Boulevard.

"But the purpose is not just to do architecture. It's to redefine what a city is. The architectural world is disappointing in its inability to seize on this kind of effort and become involved with it—that is, apart from Eric. What we are trying to do with Eric is make a national statement that good architecture is worth going after. Architects should entice developers with their thinking. They should not turn them away. They should seek them out and try to influence them. It is easy to say 'Developers hate us and will ruin our designs,' and walk off into the sunset, and teach somewhere. But the dialogue has to begin. The universities need to train architects about how to work with government agencies and developers, as well as how to understand materials. We have the fundamental belief that architecture is an art form. We wanted to show the local community—the normal people—it could be done."

While the elongated bar, with its straightforward orthogonal plan, allows flexible partitioning of interior spaces, two architecturally energetic incidents break up the air of calm of the overall volume. At the front of the complex, along the access road, is the first spatial event, a large sculptural stair that brings a strong orienting focus to the complex. The cutting and wrapping of the exterior walls are aggressively expressionist in a very identifiable Mossian manner. The helmet-like shape owes much to the hourglass form first seen in his submission to the "Late Entries to the Chicago Tribune Tower Competition" exhibition in Chicago in 1980. "Here, people, instead of sand, filter up and down," Moss states.

Midway through the southwest facade the second sculptural event occurs: a pentagonal two-story court not connected to the ground, with a stair, bridge, fountain, and a circular opening crossed by wood beams. This outdoor space provides a lookout over the surroundings. "Salk Institute [in La Jolla, Calif. by Louis Kahn] has a view to the sea," notes Moss, wryly. "Our view is a sea of industrial sludge." Ironically, framed by the architecture, even this panorama has drama.

At the north end of the complex, where the elevators link both old and new structures, a double-height boardroom projects over the sawtooth-gabled roof of the existing industrial building, now painted a dark green. The massing, the muscular sculptural pieces, and the Herculean gesture of hoisting the long greenish-brown rectangular volume in the air, give Samitaur a splashy brawniness. Yet the clear disposition of office spaces and the integration of remodeled buildings in the ensemble affirms its basically functional purpose.

THE HYBRID QUALITY OF THE DESIGN SOLUTION CONSOLIDATES ITS POSITION AS A 'CENTAUR' OF POETRY AND PRAGMATICS...

The hybrid quality of the design solution consolidates its position as a "centaur" of poetry and pragmatics, as well as of architecture and urbanism. Nevertheless, its idiosyncratic nature raises the question about its being just a "one-off" solution. Does it represent a potentially viable direction for other such efforts? While the supply of underused industrial buildings smoldering on the outskirts of cities occurs nationwide, the amount of structure needed to hoist Samitaur off the ground may not appeal to developers looking for workaday solutions to office buildings in these areas. Fred Smith concedes that building in the air is "expensive," but won't elaborate on figures. Pressed about square footage costs for the new elevated portion, he responds, "We are not sure what they will be."

As a "prototype" solution, Samitaur should probably be judged as a building-as-logo. It is meant as a symbol of regeneration of the area—a sign of the pride and faith in the city, as well as the affirmation of the value of "design." Evidently its handling of these issues was convincing to a Fortune 500 company, which is taking both of the floors in the air, totalling 15,000 sq ft, plus an additional 5,000 to 6,000 sq ft on the ground, for its digital motion picture group. Fred Smith admits that, "The lease has as much momentum in closing the deal as the architecture." Still, as Laurie Smith notes, "The company didn't have to go into this neighborhood. They love the building and liked the lease." The Smiths know, as does their architect, that the ultimate "success" of Samitaur remains to be seen—financially, after the occupants have settled in, and financially, after all the uses in and around the complex are in place, and are being assessed. "We should know five years from now," says Fred Smith.

Some citizens might consider the building too expensive; others a gift to the city; [illegible] as too heavy-handed, or even too playful. [illegible] type of solution would be perceived differently depending [illegible] There is also the question about the "gentrification" of such areas, by upscale enterprises: Are they chasing out the less-upbeat businesses and minority workers that have long been in the area? This question is made more difficult by the economic erosion of South Central Los Angeles since the 1992 riots. Steven MacDonald, director of Los Angeles' Business Team for Mayor Richard Riordan, responds with a decisive "no way," to the suggestion that attracting graphic design, computer, and entertainment enterprises could drive out existing small businesses. "In Culver City and in this section of L.A., there were rotting warehouses, and the area was doing no good for anyone," he maintains. "By bringing in these new businesses, we will also encourage other small business, including coffee shops and restaurants."

Apart from such economic, urban, and architectural queries, the Samitaur Building still suggests that an aggressive but incremental approach is viable in salvaging the existing nether world that has swallowed so much of the American city. Already the Smiths and Moss are planning a second phase of the project. The city has indicated it might allow the team to go ahead with a proposal for a large conical-shaped tower, 125-ft high instead of keeping the 48-ft height limit for the area. For now, however, that phase has no specific date. Instead, MacDonald emphasizes the city's recent approval of a financing deal that will help the Smiths buy the Olympic Plastics building to the west of Samitaur.

Moss argues convincingly that the overall benefits of this effort accrue to the profession itself. As Moss, who has recently taught at Yale and Harvard among other architecture schools, puts it, "There has been a lot of discussion among students lately about how you can do something in the world of architecture. It seems you have to play the game from a center of power—that is, working with the institutions that decide things. Architects who don't do that are marginal." As far as the developers go, Moss maintains, "The Smiths' approach is bringing the center of the power to the margins—to the edge. Fred and Laurie Smith are saying that may be the way the world runs, but they won't go along with that. They are creating the situation in which they can work."

In Culver City, the margins have become a center for action, and the Smith-Moss team can take much of the credit for sparking the growth of business and entertainment campuses there, including one belonging to Sony. While many of the other design efforts look conventional next to Moss's arresting renovations, at least the ball is rolling. Other developers and their architects may decide to follow the Smith-Moss precedent. It suggests that old structures can be revitalized with injections of innovative design. It also demonstrates that high design doesn't have to be tossed out the window when the developer knocks. ■

Manufacturers' Sources

Manufactured wood joists: *Truss Joist MacMillan*
Thermally-applied zinc finish, with chemical patina: *Copperlok Systems*
Exterior cement plaster, custom color: *La Habra Stucco/Eddie Carrillo Plastering*
Modified-bitumen built-up roofing with cap sheet: *GAF*
Fixed and hopper-type windows: *Torrance Aluminum*
Storefronts: *US Aluminum*
Custom-fabricated aluminum-frame skylights: *Aluminex*
Overhead coiling doors: *Cookson*
Locksets: *Schlage Locks*
Interior paints: *Dunn-Edwards Paint Co.*
Fluorescent strip lights: *Daybright*
Incandescent spotlights: *Stonco*
Low-voltage lighting: *Focus Lighting*
Lumiere lighting: *Oase K2 Vario*
Exterior flood lighting: *McPhillben*



While Moss's structural bravura makes for dynamic sculptural moments outside and inside (below), he also does provide ample open-plan leasable space for his developer clients (left). Skylights and rows of north- and south-facing windows admit natural light into the elongated box. Interior spaces will be modified by tenants as they take occupancy.



Looking north, visitors to Wagner Park can see apartment towers at Battery Park City, office buildings at the World Financial Center, and the World Trade Center (right in photo this page). Looking southeast, the pavilions frame views of the Statue of Liberty and the harbor (opposite).

WAGNER PARK, a controversial addition to New York City's waterfront, snaps into place—by Machado and Silvetti with the Olin Partnership.

by Clifford A. Pearson

It's the view, stupid. That dictum, ignored at peril by the designer of a previous scheme for the project, ultimately became the organizing principle of the recently completed and much-acclaimed Robert F. Wagner Jr. Park at the southern tip of Battery Park City in Manhattan. With the Statue of Liberty and Ellis Island close enough to snag with a good cast of a fishing rod, it doesn't take a genius to see the importance of framing views and aligning the park's key elements to the torch-carrying copper icon in New York Harbor. But architects Machado and Silvetti Associates, in collaboration with landscape architects at the Olin Partnership, and garden designer Lynden B. Miller—the team that made Wagner Park a reality—were wise enough to understand it's not *just* the view, stupid.

A 3.5-acre site wedged between the planned community of Battery Park City, the historic paths of Battery Park (now crowded with tourists and phony Rolex hawkers), and the financial district's crush of skyscrapers, Wagner Park sits at a crossroads of public, private, and quasi-public realms. Respecting the project's remarkable location while carefully negotiating New York's byzantine politics is no easy feat. Just ask Jennifer Bartlett, the artist whose 1988 design for the project (then called South Garden) featured an inward-looking grid of small outdoor rooms and elicited such an outpouring of negative reactions that it suffered a long and public death.

Burned by the Bartlett fiasco, the Battery Park City Authority (BPCA), the state-chartered agency that oversees public and private development at Battery Park City, established more specific design guidelines for its second go at the project. These included keeping views to the water open, creating a place that feels safe and welcoming, and building a park that is not expensive to maintain, says Susan Kaplan, senior project manager for BPCA.

After interviewing more than 10 design firms in 1991, BPCA decided to pair Machado and Silvetti with landscape architect Laurie Olin (whose firm was then known as Hanna/Olin). Olin had already designed Battery Park City's waterfront esplanade and worked on several portions of the community's master plan, so he was a logical choice. Rodolfo Machado and Jorge Silvetti, on the other hand, had built very little and showed mostly plans of beautiful urban interventions in European cities. Although known in academic circles and for teaching at Harvard, Machado and Silvetti were clearly a bigger risk.

Since the early 1980's, the BPCA has frequently commissioned



work from artists and designers who aren't on "the usual suspects" list, and often pairs them with more established firms.

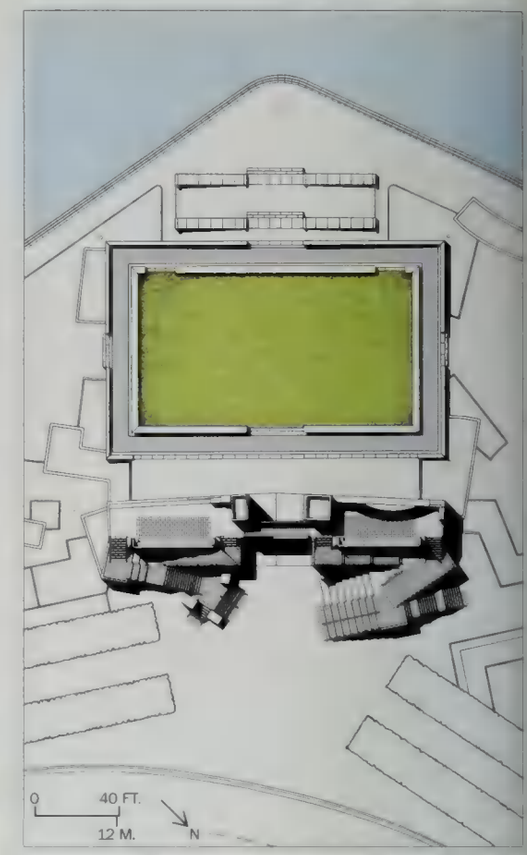
"We were attracted to Machado and Silvetti's urban-design interests and the way they thought about open space," says Kaplan. "They approached space from more than just a traditional park point of view." Although known for their theoretical work, the architects say they enjoy the rough and tumble of the building process. In their 1994 monograph *Unprecedented Realism*, the pair writes, "Theory can no longer be separated from practice," and discuss how architecture must connect to popular culture and buildings to their larger contexts.

Indeed, engaging its surroundings is a key theme in the design of Wagner Park and the dual pavilions at its center that house a café, restrooms, and a maintenance room. Anchored by a strong axis aimed straight at the navel of Lady Liberty, the park opens to views of the harbor. Both the landscaping and the architecture provide a variety of perspectives of the harbor, offering some of the best places in town to

Project: *Robert F. Wagner Jr. Park New York City*
Owner: *Battery Park City Authority*
Architect: *Machado and Silvetti Associates—Rodolfo Machado, Jorge Silvetti, principals-in-charge; Peter Lofgren, project architect; Douglas Dolezal, Elizabeth Gibb, Nader Tehrani, design team*
Landscape Architect: *Olin Partnership—Laurie Olin, Lucinda Sanders, principals; Bobbie King, project manager; Karen Janosky, senior landscape architect; Cora Olgyay, Marsh Kriplen, Kacey Constable, Karen Skafte, Les Bishop, Lara Deines, Joseph Eades, design team*
Garden Designer: *Lynden B. Miller*







The last piece of park space at Battery Park City, Wagner Park continues the waterfront esplanade that runs the length of the planned community. The new park serves as a link between the residential areas of Battery Park City and historic Battery Park (site plan above left). On the city side (east), the pavilions and their grand staircases form a plaza and informal amphitheater (left).

appreciate the Statue and its setting. From the east (the city side), the brick-clad pavilions and the bridge connecting them form an architectural frame for viewing the Statue. Walk up the grand stairs that are the highlight of the pavilions' east face and you get to the rooftop terrace of each pavilion—the one to the north offering views bracketed by a grand brick arch and the one to the south left unobstructed.

Making connections

Away from the water, the park's central axis branches off into two tree-lined allées that connect to Battery Park to the south and the rest of Battery Park City to the north. While some residents of Battery Park City were wary of making a strong connection to the less tidy environs of Battery Park, the designers of Wagner Park provided clear links without sacrificing the special character of their more regulated realm.

Because they act as a transition between the water and the financial district's skyscrapers, the connected pavilions had to accommodate a quantum leap in scale. "The idea was to make it massive," explains Machado of the pavilions' architecture. "We had to deal with the monumental scale of the Hudson River and the World Trade Center." As a result, the small pavilions "had to look bigger than they really are," says Machado. The architects' initial scheme suggested an ancient temple whose columns and foundations are all that's left. During the design process, the temple and ruins evolved into a thick wall with giant arches that vaguely evokes images of massive pylons supporting some kind of urban infrastructure (see sketches on last page of article). "Getting the right scale was key," asserts Machado. "The building had to stand its ground without overpowering people in the park."

To reinforce the building's bulky esthetic, the architects canted some of its vertical edges and angled (ever so slightly) the waterside facades of the pavilions. Long Roman brick, laid in nearly a dozen different patterns, adds texture to the building and contributes to the muscular quality of the architecture. Despite appearances, the building is a poured-concrete structure and the bricks are merely cladding. A thin metal frame around one of the brick arches gives the joke away and is one of the few false notes. After expending so much effort creating the illusion of mass, why undermine it with a sly architectural wink? Do we really want the magician to tell us how he does his tricks?

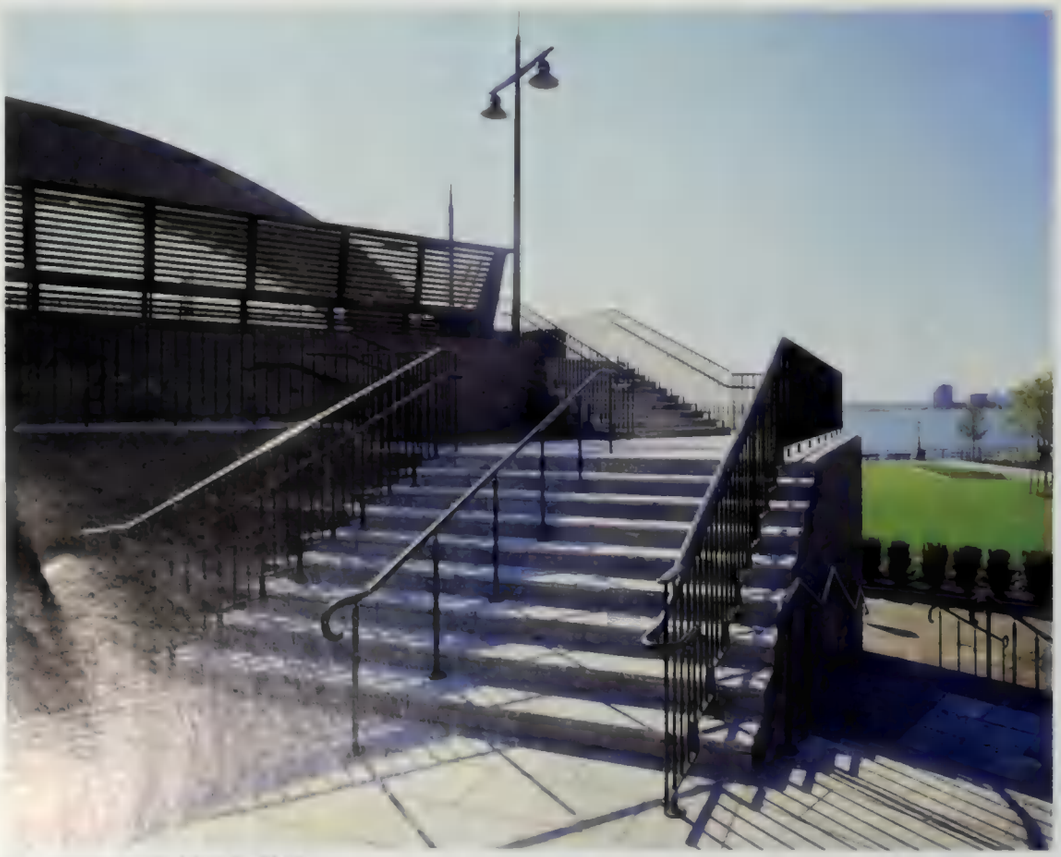
Like good sculpture, the pavilions work from all directions. From the water side, they provide access to restrooms and a small take-out café, and serve as a hard edge to the 162-ft-wide grassy terrace that is the project's front lawn. Flat facades and great arches defer to or frame views of the water. From the city side, the pavilions and their sprawling stairs wrap around a plaza and form an amphitheater where street performers and more organized events can entertain visitors. Here brick and granite steps zig-zag their way up the pavilions, brandishing a tough urban character that complements the jagged skyline just beyond.





Seen from the water side, the pavilions with their asymmetrical arches evoke images of a human face, albeit a winking one (above). When the designers began work on the project, the only function envisioned for the pavilions was as a maintenance facility. "From the start, we knew we needed a raised terrace for viewing," says Rodolfo Machado. "So we needed something to put underneath it. A café and restrooms seemed like good ways of bringing activity to the building," explains the architect. The café is under the wide arch on the right pavilion (above), while entry to the restrooms is through the small arch in the left pavilion. Short lamps in the park are the same as those lining Battery Park City's esplanade; tall ones were designed by Machado and Silvetti for this project (left). A garden with wooden benches and beds planted with a complex mix of flowers sits on the cityside of the park, while sloped and angled beds with fewer varieties of plants stretch out toward the water and the view of the harbor (left).





Sunk a foot and a half to protect plants from waterfront winds, a garden has its own microclimate that is a few degrees warmer than the rest of the park (above). Abutting an allée on one side and the pavilions on another, this garden has a sense of enclosure that contrasts with the open lawns closer to the river. Tapestry-granite steps (left) lead to viewing terraces 19 feet above the ground. Tall wood-backed benches (left in photo) were modeled after ones found in windy coastal locations in other parts of the world.

Since the architects, landscape architects, and garden designer worked collaboration, all of the pieces at Wagner Park fit together. From the start, Machado and Silvetti and Olin explored similar ideas. Olin remembers being startled at how similar his initial "doodles" were to sketches drawn by the architects. "We both had fragments of architecture set in a park and opening to the harbor," says Olin. About halfway through design, however, things seemed to get stuck. "Various aspects of the project were too compartmentalized and too stiff," recalls Olin. "So we started prying open the flower beds and other parts of the landscape." Machado and Silvetti responded by angling the pavilions and bending the stairs. "What happened was a good old-fashioned iterative process of each of us going back and forth responding to moves made by the other," explains Olin. "It was great."

Different faces for the city and the water

"The site and buildings really interlock," says Lucinda Sanders, a principal at the Olin Partnership and the project manager for Wagner Park. Just as the pavilions present different faces to the city and the water, the landscaping changes from formal allées and traditional English flower beds on the east to angled planting areas that seem to be flying apart toward the west. Gardens on either side of the pavilions are sunk 18 inches to protect flowers from the harsh harbor winds and create slightly warmer microclimates, explains Sanders. In fact, the small drop has worked so well that extra shading may be necessary until trees along the allée fill out.

The closer to the riverfront the park gets, the more open its landscaping becomes. In a city where open space is one of those great luxuries, the rectangular lawn terrace running the full width of the pavilions and facing the harbor is a dramatic element that takes center stage. Rimmed by a backless wood bench with a gentle pillow profile, the lawn is an unadorned plane of grass. The understated elegance of the lawn wipes away all thought of the suburban variety and takes us right back to its Baroque roots.

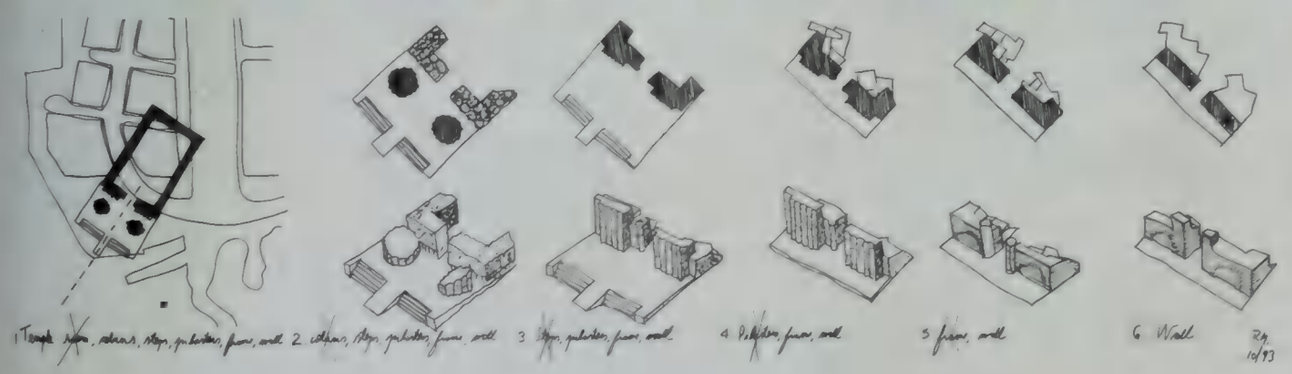
Although it took two tries and several extra years to get it right, Robert F. Wagner Jr. Park shows it's still possible to create remarkable public spaces and the quasi-governmental BPCA can still play the role of enlightened client. With just 3.5 acres and $14 million to play with, the designers sculpted a series of gardens, lawns, plazas, and terraces that offer a variety of experiences, from sunbathing between the twin shadows of the World Trade Center to soaking in the view of New York Harbor. Equally important, the project serves as a welcome link to the rest of downtown, providing a retort to critics who say Battery Park City has kept the less tidy realm of lower Manhattan at arm's length to buffer its mostly middle-class residents from the urban fray. ■

Manufacturers' Sources
Brick: *Endicott, Ironspot #46*
Stone: *Kitledge tapestry granite; Fletcher granite*
Steel windows: *A&S Windows*
Exterior lighting: *Bega (fixtures); poles (custom)*
Elevators: *Dover Elevator Systems*









The solidity of the pavilions serves as a counterpoint to expansive views framed by arches and allées (above). Sketches (left) show the evolution of the design from a temple ruin to a thick wall split by a gate.



Margaret Helfand used a veneer called Strathaven Gneiss for Kolhberg Hall's exterior to match the stonework typical of the Swarthmore campus (opposite). Treated as a "wrapper," it contrasts with existing buildings' bearing walls.

ANALYSIS: Margaret Helfand's KOHLBERG HALL at Swarthmore College is Quaker in substance, not in style.

by Thomas Hine

It's easy to understand why there has never been a coffee table book called "Quaker Style." Unlike the obsessively refined simplicity of the Shakers, the Quaker ideal of plainness has produced, more often than not, buildings of timeless awkwardness that fuse the durable and the dowdy.

Swarthmore College is an institution that is very aware of its Quaker tradition despite the presence of few actual Friends. When it became clear that more academic space was needed, Swarthmore approached the issue in a very Quakerly way—with serious study, years of consensus-building, broad participation, occasional reconsideration of previous decisions, and an eye to the century after next.

The result was an ambitious rethinking and reconfiguration of the heart of the school's campus, with Kohlberg Hall, an austerely picturesque 57,000-sq-ft building of classrooms, offices, and gathering spaces as its centerpiece. It's Quaker and, quietly, stylish.

Combining such traditional elements as the same local gray Strathaven Gneiss used on old campus buildings, and such contemporary ones as colored, dichroic (coated) glass accents, Kohlberg Hall does not look as if it has always been there. But it does look as if it always should have been there. Swarthmore, a small college whose buildings are scattered about a large arboretum, finally has an architectural focus.

The project began with the college's decision to do something about its oldest classroom building, which was both overcrowded and badly deteriorated. "The question of whether to renovate and add, or demolish and rebuild, or renovate and build another building suggested a need for a master plan that could also address future sites, paths, roads and other issues," says Larry Schall, the associate vice-president who shepherded the project.

After a nine-month selection process, a design team of two architecture firms, a landscape architecture firm, and an artist was put to work on all these issues. Their recommendation: renovate the old building and build a new one on a site that was obvious, but difficult because it required relocating the campus utility infrastructure.

"The master plan was important because it gave us a decision not only on where the building should be, but what it should be," said Margaret Helfand, AIA, Kohlberg's architect. She credits collaborators

Thomas Hine is the author of The Total Package, Facing Tomorrow, *and* Populuxe. *He was the architecture critic of* The Philadelphia Inquirer *from 1973 to 1996.*



Project: *Kohlberg Hall, Swarthmore College, Swarthmore, Pennsylvania*
Architect, master plan/conceptual design: *Helfand Architects and Ehrenkrantz & Eckstut Architects in association; Coe Lee Robinson Roesch, Inc., consulting landscape architect; Mary Miss, artist*
Architect, design development/construction: *Helfand Architects—Margaret Helfand, AIA, principal-in-charge; Martin Zogran, project architect; Marti Cowan, project designer; Toby O'Rorke, Scott Carr, Scott Mahaffey, Meg Henry, Brenda Barnes, project team*
Engineers: *Christakis, Van Ocker, Morrison (structural); Syska & Hennessy (mechanical)*
Consultants: *Jerry Kugler Associates (lighting); Cerami + Associates (acoustical)*
Construction manager: *Lehrer McGovern Bovis*

Kohlberg Hall is in the campus' center, completing an open quadrangle. Its U responds to pedestrian traffic.

1. *Kohlberg Hall*
2. *Parrish Hall*
3. *Trotter Hall*
4. *Performing arts building*











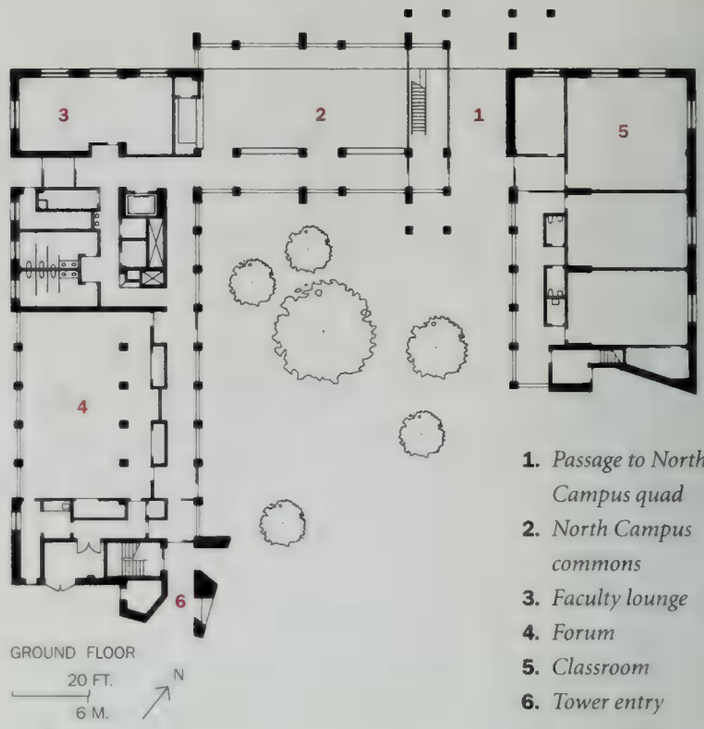
The 57,000-sq-ft academic building is a stone-clad steel-framed structure. The stone of the exterior was laid in a combination of random and rectangular patterns.





Kohlberg Hall gives the Swarthmore College campus an architectural focus it has always lacked, as the result of a rethinking and reconfiguration of the heart of the school's campus. The building expresses the Quaker ideal of plainness without being awkward or dowdy. In fact, it is quietly stylish.





1. *Passage to North Campus quad*
2. *North Campus commons*
3. *Faculty lounge*
4. *Forum*
5. *Classroom*
6. *Tower entry*

Dichroic glass contrasts with the stone (above). A covered passage weaves the building into the campus.

The main stair connects classroom areas. The forum and faculty lounge are on the ground floor, accessible from the colonnade. Helfand designed most of the furniture.

Stanton Eckstut, FAIA, and artist Mary Miss for creating, with her, a design that helps define several distinct outdoor spaces. Its footprint, a U with uneven arms, allows it to appear large and symmetrical where it serves as the side of a large quadrangle, to present a welcoming courtyard to those who arrive at a new automobile arrival point, and to respond to the diagonal path students take across the campus from the dining hall and student center to the classrooms and dormitories beyond. A tower with a sundial at the long end of the U marks the entrance to the academic part of the campus. The space within this three-sided cloister contains the design's chief false note: a constructed ruin that outlines the footprint of the building that was razed for this project.

The ground floor contains the forum—a kind of campus living room—a faculty lounge, and a room for meetings, banquets, and other campus functions. The upper two floors have large classrooms in the base of the U, with offices and seminar rooms on its arms. Throughout the building, the corridors are generous, with built-in benches and nooks with easy chairs. "Getting away from everybody with a book is the Swarthmore image," says Helfand, a member of the class of 1969.

Although the detailing makes it clear that the gray stone exterior is a veneer, it's a chunky 8-in.-thick veneer. On the tower and in the symmetrical north facade, it is set in an ashlar pattern, while on its less formal sides, the stone forms a cobweb pattern similar to its older neighbors. Slabs of pink and gray Minnesota granite accent the entrance of the tower and other spots, where slices appear to have been taken out of the mass of the building. "If there's one word that describes Quaker architecture, it's 'sober,'" says Helfand. "We tried to achieve that by using traditional, durable materials, and by not applying any egregious decoration."

There is, nevertheless, a sense of luxury that comes from the materials, which include large amounts of cherry paneling, slate floors, and gold tile that is used in a vaulted passage through the building and as an interior accent. Helfand also designed nearly all the furniture, including faculty desks, seminar tables, and overstuffed chairs in the forum. Like some of the old Quaker meeting houses nearby, Kohlberg Hall calls attention to its details in a way that flaunts not their elegance but their necessity. Where steel columns are clad in granite, for instance, the slabs overlap at the edges, to insist on their role as covering rather than structure.

While art history professor T. Katori Katao, who had Helfand as a student and pushed for her selection, sees these elements and the bright glass panels as examples of "surreptitious Postmodernism," Helfand finds an educational purpose. "The students have come to understand that everything in the building is done for a reason," she says, "even the goofiest things, like the holes in the seminar tables." (They allow the students to plug in their notebook computers.) "It provides them with a kind of Architecture 101 to have this building to figure out." ■

Manufacturers' Sources

Cobweb and ashlar granite panels and trim: *Strathaven Gneiss, Cold Spring Granite Co.*
Modified bituminous sheet roofing: *GS Roofing Products Co.*
Slate tile: *Natural Slate*
Aluminum fixed, casement windows: *Milco, Wausau*
Clear glass: *Viracon*
Dichroic glass: *Rudy Art Glass Studio*
Metal doors: *American Steel Products*
Wood doors: *Weyerhaeuser Co.*
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Acoustical ceilings: *Tectum, Inc.*
Suspension grid: *Armstrong*
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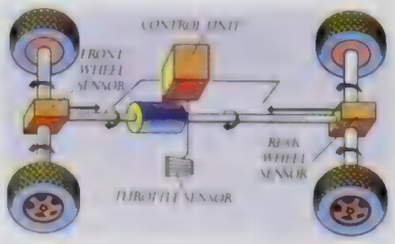


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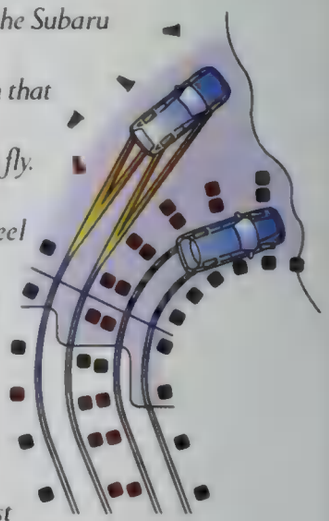
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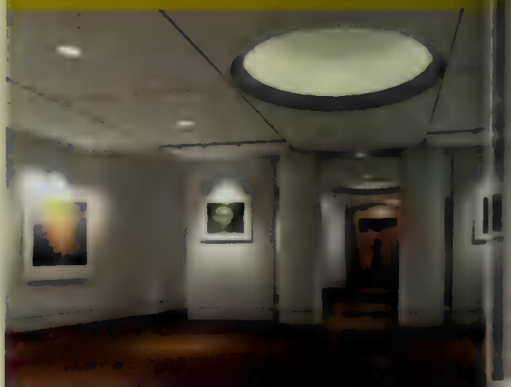
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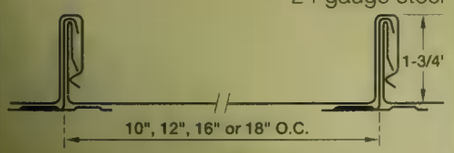
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CIRCLE 31 ON INQUIRY CARD

The Latest Chapter in the Cabrini-Green Saga:

Can Public Housing Be Reinvented?

THE CITY OF CHICAGO AND HUD THINK THEY CAN TRANSFORM A NOTORIOUS HOUSING COMPLEX INTO A SAFE AND VIBRANT COMMUNITY. THE STAKES ARE HIGH.

by Blair Kamin

Editor's note: This article is the first in an intermittent series that will follow the Cabrini-Green project as it goes through the long and, no doubt, convoluted processes of programming, design, approvals, and redevelopment. Called "the poster child of troubled public housing" by a HUD official, Cabrini-Green is an important test case that will have national impact on housing policy, urban planning, and the architectural profession. The size and scope of the plan now being debated make this redevelopment one of the country's biggest since the heyday of urban renewal in the 1960s. Architecture critic Blair Kamin, who has covered Cabrini-Green for the Chicago Tribune, *provides an overview of the project and the issues at stake. Future articles will provide updates on the project and address a range of social, political, and planning issues.*

Twenty-five years after explosives brought down three of the high-rises at the Pruitt-Igoe housing project in St. Louis and shattered the Modernist credo that good design could effect the good society, the curtain is about to rise on a new social housing drama in Chicago, and it will be watched anxiously nationwide.

Redevelopment could transform the notorious Cabrini-Green public housing complex—a three-quarter-mile-long stretch of high-rises populated almost exclusively by the poorest of the poor—into a neighborhood with a mix of uses and income groups, seamlessly rejoined to the rest of the city.

That, at least, is the happy-ending scenario, in which "project" becomes "community."

But anyone who thinks that this best-of-all-possible worlds will transpire easily or quickly is either a Panglossian optimist or an innocent unfamiliar with Chicago's bitter racial politics.

It can take years to endow troubled public housing with a semblance of normalcy. The task ahead will be even more difficult if, as some predict, welfare "reform" cuts off payments and renders thousands of people homeless.

There is a singular irony that this drama is unfolding in Chicago. The very city that gave the world the architectural glories of Sullivan, Wright, and Mies also has produced the nation's most nightmarish concentrations of public housing—the Poor House as well as the Prairie House.

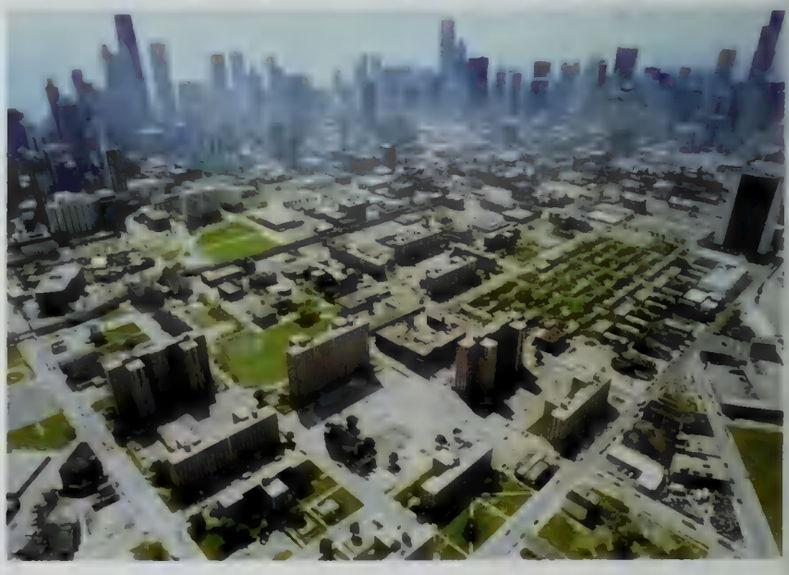
With 3,200 units, Cabrini-Green is not even the largest or the worst of the city's projects. But located on the Near North Side, just a mile or so from Chicago's downtown Loop, it may be the most infamous.

The stakes in remaking Cabrini-Green are enormous, and not only for the project's 7,300 official residents, nearly all of them African-American, who fear that "redevelopment" is a code word for kicking them off their land.

Andrew Cuomo, President Clinton's choice to replace Henry Cisneros as Secretary of the U.S. Department of Housing and Urban Development (HUD), will need to show dramatic progress at Cabrini-Green if he is to persuade a hostile Congress to withhold the budget axe. Since 1995, when Cisneros approved a takeover of the scandal-plagued Chicago Housing Authority (CHA)—making Cabrini-Green a ward of the federal government—the Republican-controlled Congress has slashed the agency's $25-million budget by nearly a quarter.

Surely, too, there will be repercussions for Chicago Mayor

Cabrini-Green sprawls before the skyline of Chicago (below). **Neglect and arson scar many buildings in the project (opposite).**



[Blair Kamin is architecture critic of the Chicago Tribune. *In 1995 he wrote a six-part series for the* Tribune *entitled "Sheltered By Design," that examined [illegible] as well as ideas and methods that might make*

Richard M. Daley, son of the legendary "Boss." Last year, Daley assumed control of the redevelopment project from the housing authority and vastly broadened its scope in order to jumpstart the CHA's stalled, smaller plan. Encompassing 65 acres of prime land almost in the shadow of the black, truncated obelisk of the 100-story John Hancock Center, the redevelopment is thought to be the largest urban renewal effort in Chicago in three decades.

Cabrini-Green is "immensely important," says Marc Weiss, a special assistant to the Secretary at HUD. Cabrini, Weiss says, "is the poster child of troubled public housing."



Bring in the New Urbanists

So significant is the project that HUD, which has lately embraced the New Urbanism, tried to import the movement's leaders, including Elizabeth Plater-Zyberk of Duany Plater-Zyberk (DPZ) Architects and Planners in Miami, to lead a charrette. Instead, Daley co-opted the process and hired a team led by the Chicago office of Ann Arbor, Mich.-based planners JJR/inc. But if the New Urbanists lost that battle, they may have won the war.

The JJR team includes Boston architects Goody, Clancy & Associates, who used New Urbanist principles to shape the remarkable transformation of that city's Columbia Point housing project into a successful mixed-income complex known as Harbor Point. The charrette plan, the first step in a process that could see contracts for portions of the development let as early as this spring, follows a New Urbanist formula [see Update on last spread of this article].

For the New Urbanists, Cabrini-Green provides a chance to silence claims that their movement is largely concerned with upper-middle-income, suburban housing, masking sprawl in the town-planning traditions of yesteryear.

Whatever their formal inclinations, all architects arguably have a stake in what happens at Cabrini-Green. Rightly or wrongly, the outcome of the redevelopment will affect the public perception of architects as well as the profession's view of itself.

If Pruitt-Igoe spawned the myth that poor design caused public housing's woes, Cabrini-Green offers a chance to refute that falsehood. It also provides an opportunity to broaden the sense of social mission a select group of firms kept alive during the era of "starchitects" and mass-marketed tea kettles, birdhouses, cookie tins, and fish lamps.

That's assuming, of course, that all goes according to plan. In Chicago, it rarely does.

A year ago, expectations rose after 10 teams of developers and architects submitted Cabrini-Green redevelopment plans to the CHA—only to see nothing done after officials decided the scope of the proposals was either too small or that they did not provide enough public housing.

Aided by the delay, residents in October filed a lawsuit seeking to prevent demolition of more high-rises, a cornerstone of the CHA's plan. As of early January, a federal judge had yet to decide the case.

What makes Cabrini-Green a subject of continual fascination is the way it butts up against some of Chicago's most affluent areas, including the so-called Gold Coast along Lake Michigan, as well as the boutiques of Oak Street, which cater to talk-show host Oprah Winfrey, the billionaire Pritzker family, and those who are merely millionaires.

Location, location, location

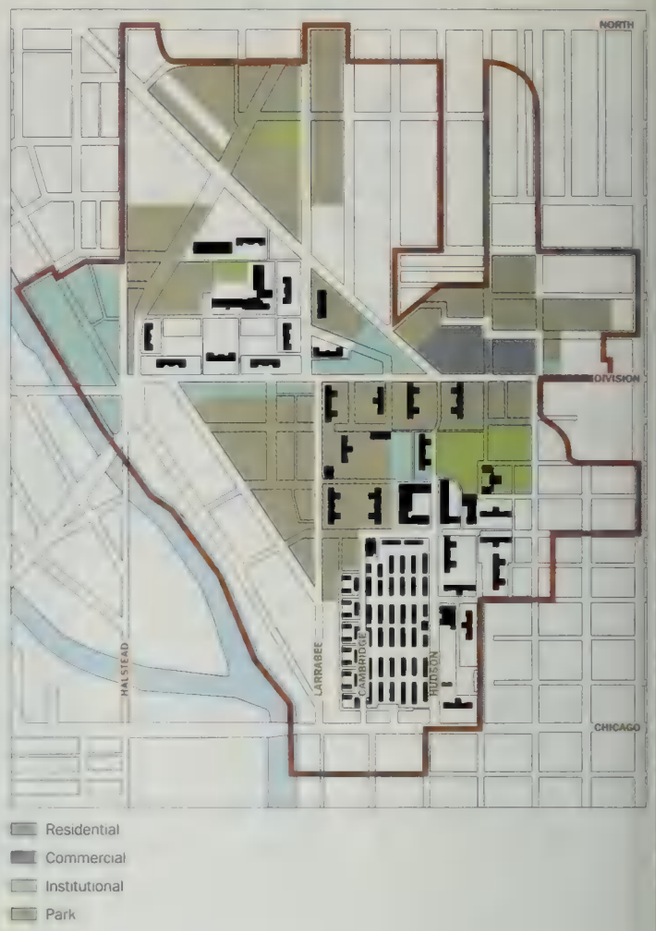
Cabrini-Green is so close to all this, yet so far. Its physical isolation is palpable, with poorly stocked, overpriced grocery and liquor stores a short walk down aptly named Division Street from Starbucks.

The visible walls that fence off Cabrini-Green are snaking elevated tracks and dead-ends in the Chicago street grid; no one seems to know why they were put there, or when.

It is clear, however, that while Cabrini-Green is much talked about as a symbol of public housing, it is hardly typical. Very few public housing developments sit alongside such vibrant neighborhoods, offering them such a tightly woven urban fabric to which they can connect—the classic solution prescribed by Jane Jacobs in *The Death and Life of Great American Cities.*

Cabrini-Green proper occupies 9.3 acres on Chicago's Near North Side. The three phases of construction can be seen in bold on site plan (right) with the earliest barracks-like rowhouses at the southern end, the 15 high-rises known as "the Reds" in the middle, and the eight "Whites" at the top. Two of the high-rises shown here have been torn down. Area plan (far right) shows the 65-acre scope of the latest redevelopment plan.





Today—partly due to the rise of the suburban edge cities that did not exist when *Death and Life* was published in 1961, and partly as a result of the movement of jobs to inexpensive Third World markets—many projects are in "de-urbanized" areas, with scores of vacant lots and shuttered businesses. In such wastelands, like the one occupied by Cleveland's fenced-in Renaissance Village public housing complex, there is nothing left with which to connect. Here, the New Urbanism ideal of weaving public housing seamlessly into the rest of the city is a fantasy.

Indeed, the history of Cabrini-Green offers contemporary architects and planners a cautionary tale of do-goodism and ideology destroyed by factors beyond their control.

"We thought we were doing . . . a lot of innovative design things, like putting open galleries on each floor so kids could play right in front of their apartments," Cabrini-Green architect Lawrence Amstadter explained in a 1985 interview. "We didn't forsee the kids throwing each other off them."

Some historical background

Before there was Cabrini-Green, there was "Little Hell," a Near North Side slum with vermin-infested, garbage-strewn alleys and dangerous streets in which residents endured a rate of violent crime 12 times that of non-slum neighborhoods. In the 19th and early 20th centuries, it housed successive waves of European immigrants: Germans, Irish, Swedes, and finally, Sicilians, before a typical urban-renewal drive began.

From 1941 to 1943, the Chicago Housing Authority constructed 55 barracks-like rowhouses and named them for Mother Frances Cabrini, a Chicago nun and the first American-born saint. To lower per-unit costs, however, the agency turned to high-rises. From 1955 to 1958, the CHA built the Cabrini Extension, 15 high-rises designed by Amstadter's firm, A. Epstein and Sons. Placed in a parklike setting and ranging in height from seven to 19 stories, the buildings had exposed concrete frames with red-brick infill. They were literally poor man's Mies, bereft of both the expensive materials and the uplifting spirit the master brought to the structurally expressive 860 and 880 North Lake Shore Drive apartment buildings completed four years earlier. Today, as if to underscore their monotonous, institutional quality, Cabrini residents call them "the Reds."

Their counterparts north of Division Street, "the Whites," eight high-rises with whitish-gray concrete frames, went up from 1959 to 1962. Fifteen and 16 stories tall, they were named for Chicago labor leader William Green and designed by Pace Associates. "The Whites" were poor man's Corbu.

There are 65 to 144 units per high-rise, a density that worked well when the project was largely inhabited by the working poor, but proved troublesome as the percentage of jobless and desperately poor residents soared.

In its early years, long-time residents say, Cabrini-Green was a good place to live, with tightly enforced rules contributing to a sense of order. There were even fines for walking across the grass.

But the same things that did in other public housing projects

across the country wreaked havoc at Cabrini-Green—from federal admission rules that pushed out the working poor, to a lack of tenant screening and maintenance, to a rise in drug use and a loss of good-paying, industrial jobs.

Many of these factors were fomented by the real architects of public housing's demise—politicians and bureaucrats, both national and local—and they were compounded by a disregard for the Modernist ideals of light, air, and green space. When superblock open space was paved over, the tower in the park became the tower in the parking lot.

Nevertheless, the Corbusier-inspired tower-in-the-park model appears to have exacerbated fundamental problems: Its lack of defensible space, for example, enabled ground-floor lobbies to be turned into drug supermarkets. When children threw garbage out of open-air galleries, which the architects intended to be "streets in the sky," the galleries were fenced in with chain-link, reinforcing the prison-like image of public housing.

Cabrini-Green entered America's national lexicon of infamy in 1981 when then-mayor Jane Byrne moved into an apartment to draw attention to the project's squalid conditons—only to see them worsen once the political stunt was over.

In 1992, a city grown numb to urban violence was stunned when a sniper hiding in a vacant 10th floor Cabrini-Green apartment shot and killed a seven-year-old resident, Dantrell Davis, as he walked to school holding his mother's hand. Children at Cabrini-Green called the open area where Dantrell was shot "the Killing Field." Now, the building where Dantrell lived is one of eight targeted for demolition.



The Corbusian idea of towers in a park has been subverted into towers in a parking lot, with abandoned cars dotting the landscape.

A bright new future or ethnic cleansing?

Daley's Cabrini-Green initiative was unveiled with great fanfare last June—at a City Hall press conference during which a color-coded map of the Cabrini area offered the illusion that the mayor's plan had been well thought-out. It hadn't.

In reality, the plan was little more than a zoning map, hurriedly put together by bureaucrats. Pressed for a cost estimate by reporters, Daley's chief planner pulled out of the air a $1 billion figure, which was revised downward a few days later to $700 million by the CHA.

Significantly, no residents stood with Daley as he made his announcement, and their lawyer labeled the initiative "ethnic cleansing." Despite assurances from Daley and CHA Executive Director Joseph Shuldiner that no one will be made homeless, their leaders remain convinced that that is precisely what will happen. Even officials privately acknowledge the residents have reason to be skeptical, given changes to the welfare system and Congress' decision to eliminate money budgeted for new rent vouchers. "As bad as it may be [for the residents]," one says, "the alternative may be worse."

Yet the significance of Daley's plan is undeniable. It is none other than the powerful mayor proposing to transform Cabrini-Green rather than some politically marginalized housing-authority bureaucrat.

CHRONOLOGY

- **19th and early 20th centuries:** "Little Hell" area in the Near North Side is the precursor of today's slums.
- **1941-43:** Chicago Housing Authority constructs 55 barracks-like rowhouses named for Mother Frances Cabrini.
- **1955-58:** CHA builds the Cabrini Extension, 15 high-rises designed by A. Epstein and Sons. These seven-to-19-story-tall buildings are soon dubbed "the Reds."
- **1959-62:** Pace Associates designs and CHA builds "the Whites," eight high-rises 15 to 16 stories tall, officially named for labor leader William Green.
- **1981:** Mayor Jane Byrne and her husband move into an apartment at Cabrini-Green for a short time to draw attention to squalid conditions.
- **1992:** Seven-year-old Dantrell Davis, a Cabrini-Green resident, is shot and killed as he walks to school holding his mother's hand.
- **1993:** Residents agree to a plan that would allow the CHA to demolish three high-rises at Cabrini-Green.
- **1995:** Federal government takes over the scandal-plagued CHA. Two Cabrini high-rises are razed with a third marked for later demolition.
- **1996:** Mayor Richard M. Daley takes control of redevelopment plan for Cabrini-Green from the CHA and broadens its scope. Residents file suit to block razing of five additional high-rises, as proposed by the mayor. JJR/inc. and Goody, Clancy & Associates are hired to masterplan the project. A planning charrette is held in December.

Moreover, the initiative goes far beyond the borders of Cabrini-Green—in effect, knocking down the walls between "project" and "city."

That represents a major shift, because the not-so-hidden agenda of public housing in Chicago has long been to isolate very low-income blacks from whites, as if the high-rises were file cabinets for the poor. The most chillingly visible manifestation of this policy is the nearly three-mile-long stretch of battered towers along the South Side's Dan Ryan Expressway that includes the Robert Taylor Homes, the world's largest (and Chicago's worst) public housing project.

Redevelopment scope gets bigger

In addition to the original 9.3 acres within Cabrini designated for redevelopment, Daley's plan takes in another 56 acres, including parcels controlled by the Chicago Park District, the Chicago Board of Education, and privately-owned plots the city would acquire. It envisions a low-rise mix of townhouses and flats, in which public housing units will be indistinguishable from those selling at market rates, plus new schools, parks, a police station, and stores. About 2,600 housing units are to be built, nearly 800 of them for public housing residents.The area in question is a little less than half the size of Chicago's downtown Loop.

The redevelopment's huge scope makes it a case of renewing urban renewal—a challenge to a generation of planners used to painting on much smaller canvases. But officials are at pains to describe the effort as a new kind of urban renewal, not only going beyond the single-use, dormitory syndrome that deadened public housing, but also including the poor in a predominantly middle-class neighborhood.

"This project will be a case study of how the government can move people out of public housing and into a community where there's a place for them," says Greg Longhini, a spokesman for the city's planning department.

But making it work clearly isn't going to be easy, given the many constituencies and public agencies involved. Turning Daley's outline into something real, says Edwin Eisendrath, the HUD Secretary's Midwest representative, amounts to nothing less than "a three-dimensional jigsaw puzzle."

A key question is how to attract enough market-rate residents to pull the neighborhood out of poverty without the wholesale displacement of Cabrini residents. For residents, the problem is that only half of the 800 new subsidized units will be set aside for families making less than 50 percent of the area median income of $51,300 for a family of four. The other half will go to those making 50 to 80 percent of the median—which excludes the vast majority of Cabrini-Green households. (According to the CHA, the typical Cabrini-Green family of four has an annual income of just $4,000.)

Thus, it is easy to see why resident leaders fear being made homeless, even though officials promise that vacant Cabrini units will absorb tenants who do not qualify for new housing. Years of mistreatment by politicians and bureaucrats have created a pervasive climate of mistrust; the residents are saying, "Show me."

Getting residents involved in the process

Job one for the city, planning spokesman Longhini acknowledges, is to fight the perception that Daley is trying to steamroll the residents and gentrify their neighborhood. Yet it will not help matters that city officials did not open the recent charrette to the public, unlike most of those run by New Urbanists. In addition, no residents participated, which will hurt politically and may hamper the designers because residents bring street smarts to urban design.

For example, when the Chicago Tribune organized an architecture competition for Cabrini-Green four years ago, the honor-



U P D A T E

The plan that emerged from a recent charrette for Cabrini-Green borrows from certain New Urbanist principles, such as replacing superblocks with street grids. But according to those familiar with the [illegible] provisions significantly higher densities than those usually associated with the New Urbanism.

[illegible] the Chicago office of [illegible]h.-based JJR/inc., in [illegible] with Goody, Clancy & [illegible] of Boston, the two-day [illegible] session held this past December was attended by about 30 people, including Chicago Housing Authority (CHA) Executive Director Joseph Shuldiner, an assistant to Chicago Mayor Richard M. Daley, and representatives from the U.S. Department of Housing and Urban Development, which took over the CHA in 1995.

Conspicuous by her absence was the lone resident leader invited, at the last minute, by city officials. Yet resident leaders, who have filed a suit in federal court to block further demolition of Cabrini's high-rises, clearly had an impact on the planning and design process, which sought to flesh out Daley's plan for thousands of housing units, as well as new schools and parks, and a relocated police station.

Announced last year, Daley's plan expands redevelopment beyond the troubled housing project and seeks to attract residents from different income levels.

Planners sought to resolve the tension between creating a mixed-income neighborhood and gentrification by increasing densities—up to 40 housing units per acre instead of the 20 to 30 typically found in low-income housing projects. Their new plan calls for a mix of rowhouses, flats, and stacked duplexes, three to six stories tall, but no free-standing, single-family homes. There would be 2,600 housing units, 600 more than what Daley originally proposed.

Advantages of the higher densities include: a more solid urban fabric in the development area, a better chance to weave commercial activity into neighborhoods, and perhaps a way to defuse residents' concerns about displacement.

The charrette plan will now be reviewed by government officials, public-housing residents, and other interested parties. Development contracts may be put out to bid as early as this spring with a variety of developers, architects, and contractors getting different parcels on which to work. No target date for the beginning of construction has been set.

Until recent demolition eliminated 400 apartments, Cabrini-Green had about 50 units per acre. Because the charrette was largely a physical planning exercise and addressed social and economic issues only tangentially, it remains to be seen whether the charrette's numbers game will turn out to be good politics and good planning.

Blair Kamin

able-mention-winning entry submitted by two girls from the project suggested blowing up one high-rise because it is "a very bad drug building" and putting stop signs near the Cabrini rowhouses because "many children have been struck by cars there."

Money represents another obstacle. If the Midwest economy weakens, so will the now-robust housing market, affecting the development's ability to attract middle-income tenants. A lack of capital could hinder the city's ability to carry out the charrette's mandate of reintroducing the street grid and building other infrastructure.

And while developers are building and selling $250,000 townhomes just two blocks from Cabrini, it may be something else to market such properties when buyers will be looking out the window at some of the most notorious public housing high-rises in America, where violent crime remains a part of everyday life.

In that sense, the Cabrini-Green redevelopment could not be more different than Goody, Clancy's remake of Boston's Columbia Point, which suffered similar problems as Cabrini, but was revamped all at once from 1988 to 1990, with a mix of renovation and new construction. As a result, would-be renters saw a complex from which the stigma of public housing had been erased.



At Cabrini, in contrast, that stigma will be omnipresent—unless the city and the CHA take dramatic steps to revamp the existing high-rises. When Daley announced his plans, CHA Executive Director Shuldiner promised they would be renovated. But according to people familiar with the planning charrette, no plans were made for the high-rises for fear of further alienating resident and their leaders.

The superblock dilemma

Thus, the redevelopment appears enmeshed in a contradiction: To attract market-rate tenants, the most visible symbols of blighted public housing must be eliminated. But for now, politics dictate that the high-rises and their superblocks can't be touched.

That would seem to split Cabrini into two camps: the old, tower-in-the-park project and the new, New Urbanist compound. How they will coexist over time—and whether they will be physically joined—is anybody's guess.

As much as there is a sense of promise about the upcoming redevelopment of Cabrini-Green then, there also is an underlying dread—politics could easily scuttle the entire initiative.



Elaine Logan lives with her son Jamuel and her two other children in a one-bedroom apartment where walls are crumbling and sewer gas fills the air (above). Junior Tiller mops the cagelike outdoor corridors (top).

Ultimately, the redevelopment's success hinges on a socio-economic issue: Whether Cabrini-Green residents begin to join the mainstream of American culture. Will they be able to get—and keep—jobs? Will a social infrastructure of job training and placement centers be built to accompany changes in the physical infrastructure, as HUD officials have promised will happen?

Architects tend to fixate on the product of design. Yet at Cabrini, designing the process is equally significant, especially insofar as it can be adapted to the complexities of public housing, which differ from development to development, building to building, family to family. Similarly, the process ought to recognize the limits of physical planning, as the award-winning, low-income housing architect Christine Killory has suggested. "We are firmly committed to the proposition that architecture can change people's lives," she says, "but not everybody's and not immediately and not on its own."

Even if the New Urbanism helps transform Cabrini, it should not become the New Orthodoxy, applied without regard for costs and context. A quarter-century ago, the demolition of Pruitt-Igoe fed the American fantasy of wiping the slate clean and starting anew. Today's political and fiscal realities demand a more sophisticated, non-ideological approach. There are different paths to the ideals of community and opportunity. ■

Cuba

IN A NEW ERA OF FOREIGN INVOLVEMENT, THE NATION STRUGGLES TO PRESERVE ITS HISTORIC ARCHITECTURE

by Rachel Carley, with photographs by Andrea Brizzi

By air, the trip from Miami to Havana takes less than an hour, but anyone who has made the 90-mile journey across the Florida Straits knows that it is a deceptive measure of the real distance between Cuba and the rest of the world. Nearly four decades after the 1959 revolution that put Fidel Castro in power, this island republic of 11 million remains a country in painful transition, where the socialist ideal has failed to reconcile with the reality of deprivation. Despite significant gains in education and health care, the recent loss of Soviet subsidies and the cumulative effects of the U.S. trade embargo continue to throttle an economy already plagued by internal mismanagement. Entire towns seem to have sidestepped the currents of time, while the effects of neglect are everywhere apparent: paint peels, walls sag, storefronts stand eerily empty.

But scarcity, the great preserver, has also endowed Cuba with two prime assets—an unspoiled tropical landscape and a storehouse of remarkably intact historic cities, many founded in the 1500s. Throughout most of the revolutionary period, both have remained almost completely untouched by modern intrusions. However, since the 1990 onset of the so-called "Special Period in Peacetime" (the state euphemism for a time of extreme economic difficulty), the Cuban government has begun openly peddling these resources as part of an aggressive development plan that has made tourism the island's fastest-growing earner of hard currency.

As a direct result of the push for foreign visitors, which generated gross revenues of $1.25 billion in 1996, restoration activity has stepped up in historic centers, where an increasing number of colonial buildings are being renovated for income-producing restaurants and souvenir shops. At the same time, luxury resorts are starting to consume Cuban beaches at a staggering rate. Last year, 1800 new hotel rooms alone were slated for Varadero, the famous 13-mile-long slip of sand about 80 miles east of Havana, which claims the highest concentration of waterfront resorts, restaurants, and nightclubs in Cuba. By the year 2000, the Ministry of Tourism plans 25,000 more rooms for Varadero and 50,000 [illegible] island-wide: the current annual rate of one million visitors to [illegible] to increase fivefold by the same date.

[illegible] a Master's Degree in historic preservation from Columbia [illegible] School of Architecture and Planning. She is the author of* The [illegible] to Domestic Architecture (Henry Holt, 1994) *and the forthcoming* [illegible] Architectural Heritage, *with photographs by Andrea Brizzi, to be published by the Whitney Library of Design next fall.*



Malecón, the waterfront of Old Havana, part of a 14 sq-block, $50-million restoration project, partially financed by Spain.



This accelerated growth reflects a marked turnaround in state policy, which in the early years of the revolution openly denounced tourism as an overt symbol of imperialist decadence. Moreover, many of the restoration and new construction projects are joint ventures between the Cuban state and foreign firms that Castro has actively courted since the 1989 breakup of the Eastern bloc, which reportedly reduced Cuban trade by 80 percent. To date, Cuba has established commercial dealings with some 4,500 foreign companies, with enterprises from Mexico, Canada, France, Germany, Italy, Spain, the Netherlands, and other countries focusing on tourism projects.

But if such dealings suggest a surprising flirtation with capitalism, some regard gambling short-term revenues against the long-term care of Cuba's infrastructure to be the more perplexing paradox. "Now we are facing a critical contradiction," says René Caparrós, a spokesman for Cuba's national conservation organization, *Centro Nacional de Conservacion, Restauracion y Museologia*, which is known by the acronym CENCREM. "We need the money and resources of other countries to survive and develop independently, but some of those outside resources could destroy part of our own." The size alone of some development projects, the work of vast design conglomerates, presage a serious environmental and architectural impact.

According to James Marston Fitch, an architect and leading North American preservation educator who has visited Cuba several times in the last 15 years—most recently in an advisory capacity—this dilemma is commonplace in underdeveloped countries in need of hard cash and a window on the world. "Economic and social forces compel them to look to the reservoir of their built and natural world as their only active resource; and the more they look, the more they realize its value," says Fitch.

But Cuba is different, Fitch points out, in that the country has national legislation working in its favor. Indeed, by contrast to sporadic efforts by a few independent patrons before 1959, the revolutionary government has shaped a powerful legal mechanism designed to protect individual monuments, whole towns (including the seven original Spanish *villas*, or settlements, colonized between 1512 and 1515), and natural sites.

The national preservation program is administered jointly by the Academy of Sciences and the Council of Patrimony, a component of the Ministry of Culture, itself part of an extensive Council of Ministers. In addition, the current 1976 constitution contains two important provisions, Laws One and Two, which respectively define the "national patrimony" (the actual physical legacy of Cuban history, including art works and buildings) and the "national heritage" (a more abstract concept of cumulative cultural worth). The Havana-based CENCREM, which inventories and assesses the value of historic sites and sets national preservation strategy, was founded in 1982, the same year UNESCO recognized the international, historical and archeological value of Old Havana by declaring it a World Heritage Site.





The former Casa del Conde Santovenia of 1784, which is now the Hotel Santa Isabel, in Old Havana, is being restored (top).



Old Havana's 18th-century Plaza de Catedral is a central tourist attraction (opposite).



COMMUNIST GOVERNMENTS HAVE INVESTED ENERGY AND MONEY INTO HISTORIC PRESERVATION BECAUSE THEY SEE THEMSELVES AS THE LOGICAL INHERITORS

In large part, this complex setup is a reactive measure against the rampant and often corrupt real-estate speculation of the pre-Castro 1950's, when several Havana landmarks were sacrificed to development projects designed, for the most part, to line the pockets of the Cuban bourgeoisie and foreign investors. It has made a significant contribution to protecting Cuba's assets, with new sites declared national monuments every year.

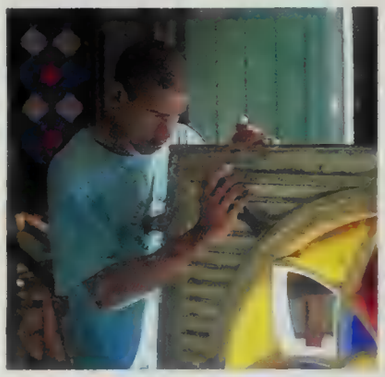
But signing the notion of Cuban patrimony into national law also reflects an important political motivation. Implicit in such legislation is the effort to establish a collective, or national, identity that is fundamental to Marxist-Leninist ideology and the populist support of a centralized government. Caparrós puts it succinctly: "Without cultural patrimony," he says, "there *is* no national identity."

According to Fitch, who has monitored preservation efforts around the world, this idea of "nationalization" follows a logical pattern. "Communist governments have invested a great deal of energy and money into historic preservation because they see themselves as the logical inheritors of the country itself," says Fitch. "This means not only socialization of industry, of education, of the economy," he maintains, "but also socialization of *history*." From the Cuban viewpoint, it follows that this history is theirs to save, or sell, as they see fit.

In moving away from the "elitist" preservation of isolated monuments, the Cuban state stresses a contextual approach to preserving "living cities," and architects invariably stress the need for comprehensive solutions that focus on the entire community. Old Havana (shown here and on the preceding pages) is a case in point. One of the most popular tourist destinations in Cuba, this section of the colonial capital covers the heart of the original walled city founded in 1514. A 214-hectare area (about 528 acres) containing 16th-century forts and some 4,000 buildings in Spanish Baroque, Neocolonial, and Art Nouveau styles is currently the subject of an exhaustive computerized study by the Office of the City Historian, which is preparing a detailed master plan for the district.

To satisfy a mix of needs for both foreign visitors and the Cuban community, structures are ranked into one of four levels according to their historical and physical value. High-level buildings are reserved for museums; the second level for hotels, schools, offices, and restaurants; and the two lowest, which can theoretically tolerate the most intrusion, are designated for housing. The Office of the Historian encourages local residents to participate directly in neighborhood rescue efforts, providing professional supervision, and when possible, materials. "We don't want a museum city," says Patricia Aloña Rodríguez, an architect with the Office of the City Historian. "We want people to live here."

Old Havana: Escuela Taller students (below). The restored Casa del Marques de Arcos (right).







Yet even the Office of the City Historian itself has gone into the business of tourism, overseeing all investment projects in Havana through its own company, Habaguanex S.A., which was founded in 1994 to generate hard currency independent of the state budget. Rather than funneling the profits back to the state, the Office of the Historian may reinvest income into new restoration projects, and also has control over the quality of the work—a decided benefit for this fragile area. Nevertheless, it is impossible for any visitor not to be struck by the glaring contrast that the area's empty lots and neglected buildings—where some 60 percent of Old Havana's population lives in slum-like conditions—make with meticulously restored 18th-century Spanish Baroque *palacios* housing cafés and restaurants rarely patronized by Cubans.

The phenomenon in which economic and social circumstances segregate a country's local population from foreign visitors—called "tourism apartheid"—is even more evident in such luxury resort areas as Varadero and the Monte Barreto section of Havana, where a state tourism plan has designated a $300 million investment for 11 new hotels with 2,000 rooms. High prices and laws intended to curb prostitution effectively bar most Cubans other than employees from such resorts, which cater primarily to Canadian and European tourists. Furthermore, the design and management of these multimillion-dollar projects often exclude the same Cuban involvement regarded so important to preserving city neighborhoods.

Management of the resorts traditionally goes to the more experienced foreign partner, even when the Cuban firms—which include Horizontes, Gran Caribe, Gaviota, and Cubánacan—put up more than one half the equity. The Canadian company Delta Hotels and Resorts, for example, has contracted to manage six Cuban resorts now owned by Cubanacan, Cuba's largest hotel chain. "We run them," says Marilott [illegible] spokeswoman for Delta. "But the bottom line was all theirs." [illegible] the Delta-Cubanacan hotels were conceived primarily by the [illegible] foreign business partners frequently recreate resorts they have already built elsewhere. The 1990 Hotel Las Americas in Varadero, started by a Mexican company, for example, has a virtual twin in Cancún. The 22-story, 462-room Hotel Cohiba in Havana—a bland steel-frame curtain-wall tower completed in 1996—was also built from an existing Spanish design, adapted to a waterlogged site with a special platform. Both hotels are now operated by Grupo Sol Meliá, a Spanish chain with 175 hotels in 20 countries on four continents and about 1,600 rooms and 400 bungalows in Cuba.

Cubans are divided between support and defense of the typically featureless hotel designs, which tend to overwhelm their sites while disregarding their tropical context and the local turn-of-the century wood-frame vernacular architecture still standing in former fishing towns like Varadero. "It is easy to criticize these projects, but that is taking the wrong standpoint," argues Caparrós, who points out that all joint ventures are subject to an approval process that covers both size and distance from the water. "They may not be beautiful or practical, but they are successful," Caparrós maintains, adding that nearly one million Cubans benefit from the tourism industry through work in the hotels and related services.

But the architect Mario Coyula, subdirector of Havana's Group for the Integral Development of the Capital, which he co-founded in 1988 to promote responsible city planning, finds fault with the state penchant for large-scale enterprises that exclude local participation. "Why can you do business with a foreign country but not the Cuban people?" asks Coyula, whose group has criticized the Monte Baretto development for its density and short-sightedness. "Cuba needs small investments, but the state only wants the big guns." The reason? "The government is afraid of losing control."

Both men believe solutions lie partly in education. On a smaller scale, traditional building skills lost before the revolution are now being revived by groups like CENCREM, which provides multidisciplinary conservation training, and the *Escuela Taller*, a rigorous architectural



CASE STUDY

Founded in 1514 as the third of the original seven Spanish *villas* in Cuba, Trinidad is the island's "colonial jewel:" an impossibly unspoiled cluster of pastel-colored houses, tiled roofs, and Baroque church towers folded into the hills above the Bay of Casilda on the south central coast. In the late 1700s, the town built a thriving slave trade, supporting dozens of plantations in the nearby Valley of the Sugar Mills, then declined precipitously after the 19th-century independence wars destroyed the sugar market. As more centrally located cities moved into the 20th century, the former sugar capital languished, cut off from the only national highway by the rugged Escambray Mountains. Virtually untouched by development since the mid-1800s, Trinidad today is the best-preserved Colonial city in Cuba, due in part to a longstanding respect for the region's importance. "Unlike other towns, Trinidad didn't have to improvise a preservation tradition after the revolution," says Nelson Melero, an architect from the national conservation organization, CENCREM, who has undertaken a study of the area's historic forts. "It has always been there."

Both the 91-acre historic core (which contains 1,200 unmodernized structures from the 18th and 19th centuries) and the 217-sq-kilometer valley (the site of 73 plantation ruins) are protected as Cuban National Monuments and were together declared a UNESCO World Heritage Site in 1988. But the same qualities that contribute to the historic value of Trinidad have also made it an inevitable magnet for tourists. Bus loads of visitors now arrive daily to explore the cobbled streets and museums, including two meticulously restored Creole palaces and the first Cuban architecture museum, founded in 1978.

To date, the 23-member Office of Historians, responsible for all restoration projects in the town and valley, has monitored a slow and sensitive maintenance program, emphasizing existing use and traditional building techniques. As a result, a decidedly authentic air hovers over the historic center, where tourist facilities are limited to a handful of cafés. But the Office has less control over Playa Ancón, a spectacular beach a few miles out of town. Although only two seaside hotels (originally built for vacationing Cuban workers) have served visitors there for the past 20 years, aggressive development on other Cuban beaches suggests that this area risks a similar fate.

VIRTUALLY UNTOUCHED SINCE THE MID-1800S, TRINIDAD IS THE BEST-PRESERVED COLONIAL CITY IN CUBA

Until recently, Cuban historians claimed this would never happen. "For one thing, developers aren't interested in Trinidad because no one has ever heard of it," said Melero during a visit there last June. "Also, the structure of the city won't allow it. This town has a deeply rooted population: People live here and they aren't going anywhere." But time may prove Melero wrong: Just a few months ago, construction began on a new hotel in Playa Ancón—a joint venture between Cuba and an Italian firm—and a broader development plan by the Ministry of Tourism is also now reportedly in the works.





Clockwise, from top left: A restored interior; Trinidad overlooking Playa Ancón; locals and tourists; Trinidad's main square.



handcrafts program for high-school-level students. On a broader scale, the state has recognized the need for sound management studies and recently developed a national education program in this area with help from foreign experts. One consequence is a recent trend away from cheap package tours to so-called eco- or cultural tourism, designed to promote Cuba's rare plant and animal world and rich heritage of music, dance, art, and theater. Some new hotels are also scaling down to their sites, incorporating intimate bungalows tucked into village-like plans.

But Coyula emphasizes that no approach will truly benefit Cuba until the government decentralizes and invests in Cuba's real wealth: the population. "We have about three million people with college degrees, about 1.5 million intermediate technicians, and more than one million good skilled workers," he says. "But right now, 100 percent of the people are on welfare."

To get them off, Coyula advocates semi-private state and city cooperatives, including small restaurants, shops, and hotels that would pay taxes. This would allow the government, industry, and the local population alike to profit. He emphasizes the logic of returning a five-mile stretch of vacant Havana storefronts to retail use and suggests renovating pre-revolutionary villas in neighborhoods like Havana's Vedado—the site of the towering new Cohiba Hotel—to create tourist accommodations ranging from modest bed-and-breakfasts to luxury inns. According to the architect, such endeavors would permit the country to move toward an "independent, self-sustaining socialism." The future is critical, says Coyula. "But instead of planning ahead, a revolution should always *be* ahead," he adds. "To fall behind is dangerous."

At some point, moving ahead will likely mean North American investment, now severely curtailed under the 1961 U.S. Trade Embargo. According to the nonprofit U.S.-Cuba Trade and Economic Council in New York City, legal commercial involvement between the two countries in areas including artwork, medical supplies, and communications amounted in gross value to more than $500 million over the last two years.

In addition, several U.S. companies are engaged in legal non-controlling investments in third-country companies doing business authorized by a Treasury Department opinion issued in March, 1994. Cuba has no law forbidding U.S. investment or tourism.

Even aside from this, North Americans routinely travel to Cuba to lay the groundwork for potential post-embargo business: American lawyers and real-estate developers have attended international seminars







The 1950's Hotel Internacional, Varadero (bottom). Inside the church (right). Habana.



New Havana (left): Hotel Melia Cohiba (at left), Hotel Riviera (at right), and a shopping center in between.

New Varadero (below): Hotel Melia Varadero (top left) and Melia Las Americas (top right); cottages (bottom).





"THE NEW HOTELS MAY NOT BE BEAUTIFUL OR PRACTICAL, BUT THEY ARE SUCCESSFUL."

offered by Coyula's Grupo, and the U.S. press has reported the presence of executives from several corporations in Havana, including the Hyatt and Marriott Hotel chains.

For their own part, American architects who have visited the island remark not so much on investment potential as on an extraordinary design context offered by an urban fabric that has escaped the unchecked expansion of other Latin American capitals. Indeed, Cuba possesses the most significant and varied concentration of tropical architecture in the Caribbean.

Throughout the island, colonial cities enriched by the late 18th century sugar boom preserve an array of buildings, including ornate Baroque churches with their original gilded altar pieces, Creole palaces distinguished by colorful murals and stained-glass windows, and modest homes of a brick-and-rubble masonry called *mamposteria*. "I expected to see another Puerto Rico or Dominican Republic," says Donato Savoie, a New York architect who has researched traditional Antillean building techniques in Cuba for a project elsewhere in the Caribbean. "But I found a beautiful landscape without parallel anywhere. There is a sense that not only the cities but even the countryside is stopped in time—it's incredible to see it."

Charles Warren, an architect who traveled throughout the island with the New York City-based Center for Cuban Studies last year, was also struck by the lack of intrusions into the landscape. "It continues to be a traditional city," he says of Havana. "And it's not just that there is a well-preserved physical context; there is an overriding social context, as well. You walk down the street and experience a street life that is unforgettably vivid, intimate, and engaging—and it probably hasn't changed much in a hundred years."

Any hope by North Americans for opportunities to design and build in this remarkable setting was recently tempered by the tightening of the Trade Embargo under the Cuba Democratic and Solidarity Act passed by U.S. Congress in 1996. To punish foreigners investing in Cuba, Title III of the Republican-sponsored law, known as the Helms-Burton Act, has made it legal for U.S. citizens and nationals to sue in U.S. federal courts firms investing in property confiscated from them after 1959. The primary impetus for this legislation, overwhelmingly supported by the Cuban exile population in North America, is to topple the island's weakened economy—and with it the Cuban leader. However, many Cubans say Castro is firmly entrenched.

Although it has caused some delays, no foreign-financed tourism project has been cancelled due to the Helms-Burton Act to date, partly because most resorts are being constructed on newly developed lands. There is some speculation that U.S. trade restrictions might ease under a second-term Democratic administration.

Meanwhile, foreign companies do not wish to miss a rare opportunity to do business without competition from the United States. And while it remains unclear how deeply the socialist state is willing to indulge in capitalist enterprises, Cuba had already signed deals for 240 joint ventures with a total value of $1.5 billion by late 1996, and continues to show every sign of staying open for business. ■

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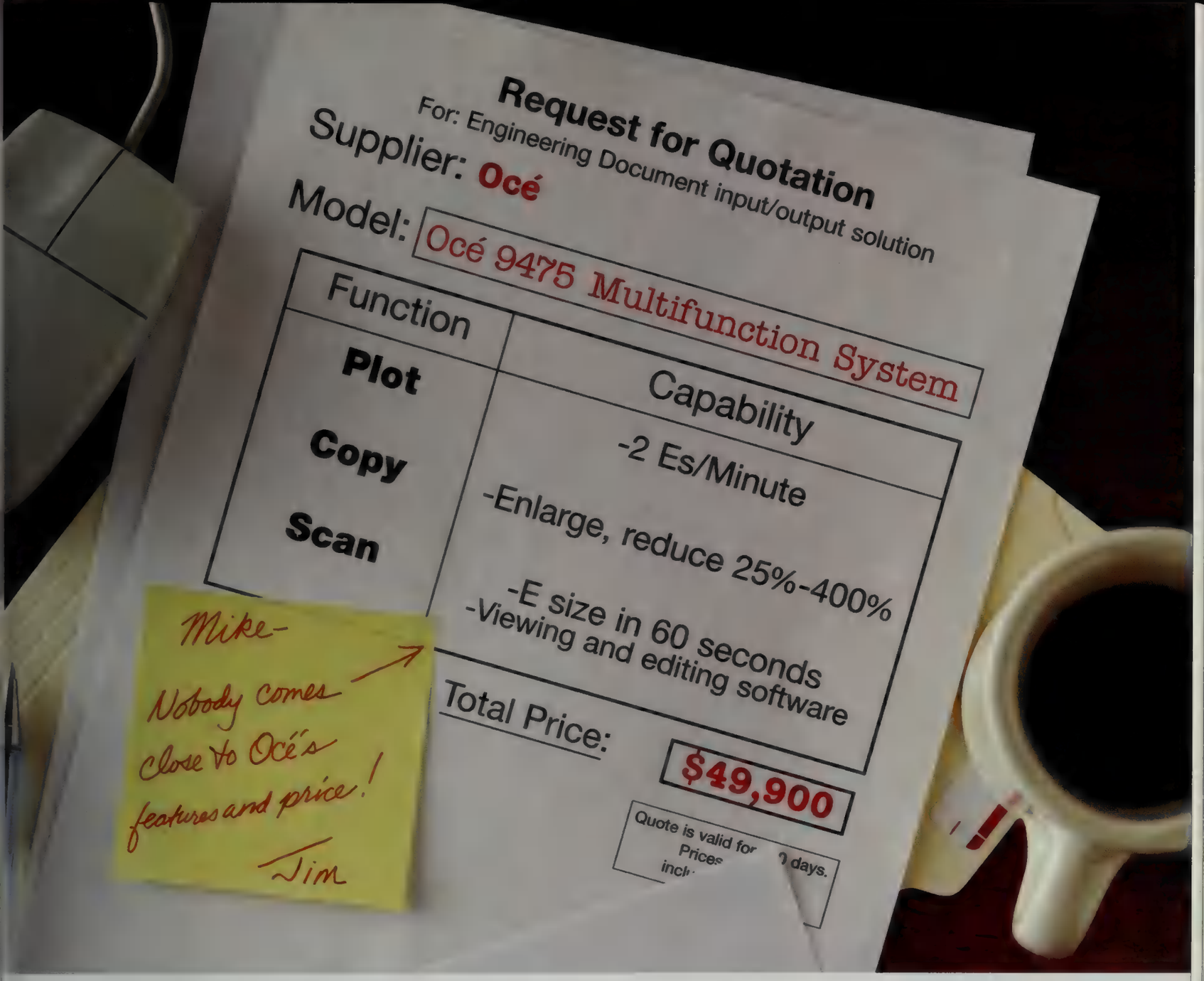
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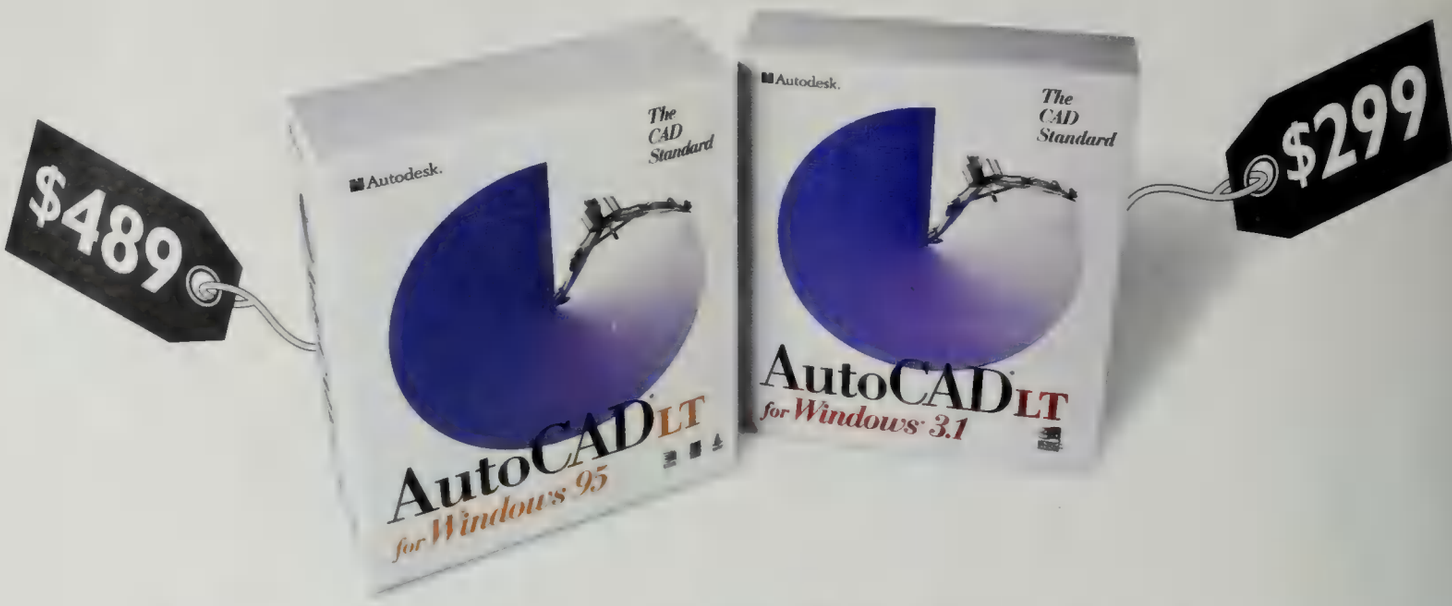
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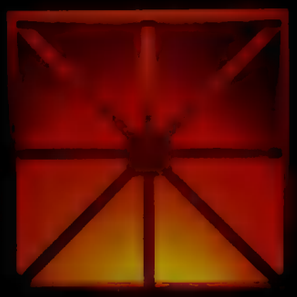
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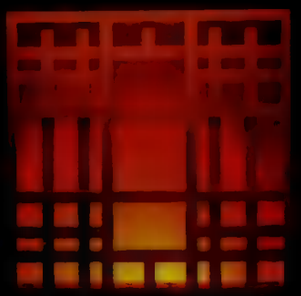
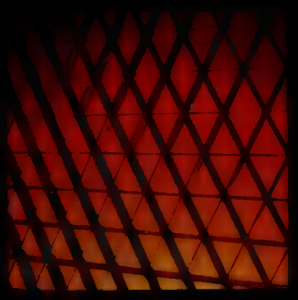
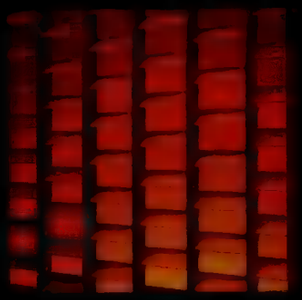
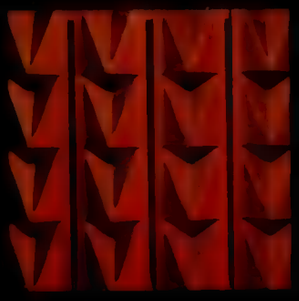
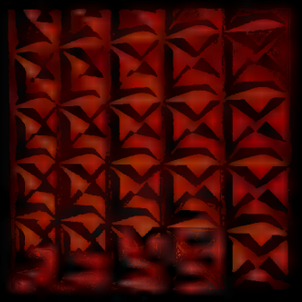
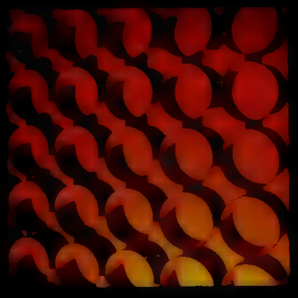
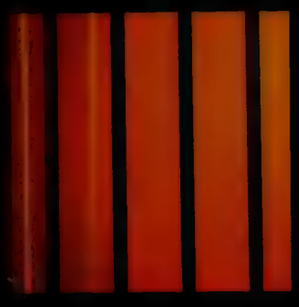
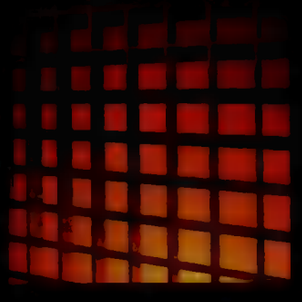
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CIRCLE 35 ON INQUIRY CARD

PRESERVATION

The Ongoing Challenge

PRESERVATION FACES A HOST OF NEW ISSUES, SUCH AS HOW TO INTEGRATE IT INTO THE PLANNING PROCESS, PROPERTY RIGHTS, AND WHAT SHOULD BE SAVED.

by Andrea Oppenheimer Dean



1

Washington, D.C.

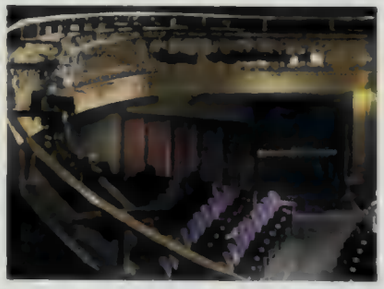
Architect Aurthur Cotton Moore lead the restoration of the Library of Congress, once called "the most beautiful building in America."



2

Baltimore

The Orchard Street Church was practically in ruins, before it was rescued by the Baltimore Urban League.



3

San Francisco

After being severely damaged by the Loma Prieta Earthquake, the Geary Theater underwent rehabilitation , including seismic upgrading and extensive modernization.

"At its best, preservation engages the past in a conversation with the present over a mutual concern for the future," William J. Murtagh, the first keeper of the National Register of Historic Places, once wrote. Today, historic preservation's goals and emphases reflect larger issues of our times, are helping to shape them, and are influencing contemporary approaches to planning and design. At the same time emphases that were important to early-20th century preservationists, such as the assumption that restoring historic buildings would promote good citizenship and patriotism, seem quaint today.

Devoted to saving high-style European-derived architecture and are in the days when mainstream Americans still accepted the ascendancy of Anglo-Saxon culture, historic preservation has expanded its embrace to ordinary industrial, commercial, and even Modern-era buildings. It has also broadened its scope to encompass historic districts and to revive communities that once had historic significance, including commercial districts of smaller towns, urban residential neighborhoods, and the downtowns of larger cities. More controversially, preservation has also stretched its concerns to broader social issues, such as promoting cultural diversity.

The National Trust for Historic Preservation, under the leadership of Richard Moe during the last four years, has focused attention on sprawl, which Moe says is "to current preservationists what urban renewal was to an earlier generation." Preservation planning has become an integral part of local and regional growth management and of comprehensive planning processes, and Moe believes that Americans are increasingly aware that outlying areas cannot thrive if their inner cities languish. Urban planners, such as Jonathan Barnett, director of the City University of New York's Graduate Program in Urban Design, meanwhile, warn that writing off our inner cities is as costly as is suburbia's continual assault on the countryside.

In recent years, preservation has also become recognized as an engine for economic development, notably through tourism in a growing number of historic districts and heritage areas, which are regional entities defined by historical themes. But by mixing tourism and preservation, preservationists create a serious potential for killing the goose that laid the golden egg, warns Robert E. Stipe, co-editor with Antoinette J. Lee of The American Mosaic: Preserving a Nation's Heritage (The Preservation Press, 1987). Stipe fears that fragile historic neighborhoods will be physically overwhelmed by increasing numbers of tourists and that these neighbor-

hoods will be adulterated by a pervasive entertainment ethos that reduces everything to picturebook (or CD Rom) images.

The economics of preservation reflect a political climate that favors devolution of authority from the federal government to state and municipal governments and to the private sector. As government funds dwindle, Stipe believes, the cost of financing preservation will need to shift from taxpayers to private property owners through tax incentives. In fact, the Historic Homeowner Assistance Act was introduced in the 104th Congress and appears to have broad bipartisan support. It would provide a rehabilitation tax credit to owners of historic houses similar to the existing credit for income-producing properties. The National Trust's Moe says that the incentive "would do more for preservation in America than any other single thing."

Not surprisingly, along with preservation's recent successes has come a backlash in the form of a growing and influential private property rights movement, which insists that the imposition of almost any land-use regulation on private property constitutes a "taking" without compensation under the Fifth Amendment. In response, attempts are being made in more and more states to define the taking of property without compensation as any restriction that reduces the property's value. Ahead lie legislative struggles and court battles define how far a government can go in placing the preservation burden on private property.

Another problem arising from preservation's success is that in some areas the growing number of buildings deemed historic threatens to overwhelm the ability of already strapped and overtaxed state and local preservation offices to monitor and review construction. "The review process is already less crisp and therefore more difficult." says Howard Decker, a principal of the Chicago firm DLK Architecture, Inc,.

Preservation shifts toward science and technology

Others, including Hugh Hardy, who is leading Hardy Holzman Pfeiffer's complex reconstruction and restoration of the New York City's New Amsterdam Theater, chaff at sometimes counterproductive rules imposed by preservation bureaucracies. But that doesn't alter Hardy's enthusiasm for preservation, which, he believes, has become a familiar and basic part of most architects' practice. Much like consumer packaging, building recycling has become mainstream. The growing number of architects involved in preservation is matched by an explosion of new and readily available information and technologies and a growing cadre of specialists.

As a result, preservation architecture has become more sophisticated and more scientific. Robert Burley, of the Burley partnership in Waitsfield, Vermont, whose work includes the restoration of Frank Lloyd Wright's Taliesin at Spring Green, Wisconsin, says that once, "architects went into it from a adaptive-use, polish-the-door-knobs, bring-it-up-to-an-acceptable-condition standpoint." But designs that were often founded on guesswork in the past now benefit from improvements in documentation, in scientific procedures for dating and analyzing a building's materials. Newly available information is accessible in the form of drawings and other data on the Internet where the AIA, the National Trust, the Library of Congress, and the National Park Service's Denver Service Center all have web sites. Regulatory and review agencies, contractors and manufacturers' representatives are also ready with new intelligence.

Computers have, additionally, enabled many practices to develop their own databases, says Stephen Kelley, of Chicago's Wiss, Janney, Elstner Associates, Inc. His firm's analysis of the facade of the Nebraska State Capitol in Lincoln, for example, included the creation of a database with an entry for each stone. It will allow an accurate evaluation in coming years of how well the material is weathering. The information can also be turned into drawings, and most firms now use computers to transfer drawings to clients, to regulatory agencies, and to consultants. What used to be a tedious process of creating measured drawings has been greatly simplified by computer imaging.

Also helpful to architects working on old buildings is a burgeoning crop of consultants. "We are more ready to draw on the historian, the building technologist, the preservation technologist," says Maury Childs of Boston's CBT/Childs Bertman Tseckares Associates. Even five years ago, his firm used consultants only for large or complicated projects. Today CBT calls on specialists to review technologies even in simple buildings, because clients and reviewing agencies "are increasingly eager to have a comprehensive set of inputs and have become more sophisticated and sensitive to various issues, " he says.

Working with landmarks of Modern architecture poses perhaps the knottiest tangle of new problems and the challenges will multiply as more and more buildings reach 50, the age of eligibility for listing in the National Register. To begin with, how do you decide which Modern buildings should be saved and on what do you base the decision? Should we preserve the first, if architecturally insignificant, McDonald's restaurant because of its value as piece of commercial history? Decker suggests that "the challenge is not what we should save but what we should forget, especially since technology lets us remember everything." He points out that a related problem is that of the newer "baby landmarks," as he calls less-than-50-year-old buildings. Many are being altered, sometimes brutally. The interiors of some recent museums, for example, are being radically transformed to meet new programs. Does that make them less "authentic" and therefore less valuable? How should we judge authenticity when it comes to recent buildings? Can a building whose use has been changed be considered authentic? While we ponder such questions many Modern buildings are being lost because of their shoddy construction or use of unorthodox materials or grossly inefficient hvac systems.

Unsurprisingly architects working with Modern buildings often find themselves in positions similar to the one faced by John Vinci of Vinci/Hamp in Chicago, when he tackled the renovation of Frank Lloyd Wright's Wingspread in Racine, Wisconsin. The under-designed roof was further weighted down by thermal-pane glass that had been added in an earlier renovation. More vexing are the problems posed by early curtain walls: Most have become badly deteriorated from sealant failure, water infiltration, and the resultant oxidation and expansion of internal framing members. And then there is the fact that many Modern buildings used experimental materials and technologies that became obsolete after only ten or fifteen years. Carrara glass, for instance, was named for its resemblance to marble and was used on storefronts and in interiors. No longer manufactured, it is obtained today only through recycling, and then the match is often inexact. As a rule, architects deal with these and other problems on a case-by-case basis and seek help from experts.

Rehabilitating outdated modern buildings apparently inspired some architects, including Kohn Pedersen Fox Associates, to return to their modern roots. But that has been sidelight, for as the architectural critic and historian Vincent Scully told a gathering at the New York Landmarks Conservancy two years ago, historic preservation is "the only mass movement that has had a fundamental effect on the development of architecture...in the 20th century." He credited preservation for affecting "politicians and planners in the basic way that we now know all important architecture comes about, urban architecture especially: through the law." Preservation laws and regulations may be pesky, as architects know all too well, but the benefit of their accumulated effect is not in doubt. ■

Library of Congress Washington, D.C.

AFTER CLEANING OUT MAKESHIFT OFFICES AND AD-HOC ACCRETIONS, ARTHUR COTTON MOORE MIXED CAREFUL PRESERVATION WITH A FEW OF HIS OWN INVENTIONS.

by Andrea Oppenheimer Dean

Project: *Library of Congress, Washington, D.C.*
Architect: *Arthur Cotton Moore/ Associates (under contract to the Architect of the Capitol)—Arthur Cotton Moore, FAIA, project architect; Kevin Hildebrand, Andre Copeland, project team*
Preservation Architect: *Einhorn Yaffee Prescott*
Engineers: *Glassman LeReche Associates (mechanical); James Madison Cutts (structural); Gage Babcock Associates (fire protection)*
Consultant: *Jules Fisher & Paul Marantz, Inc. (lighting)*
General Contractor: *Grunley Construction Company, Inc.*

Imagine stuffing "the most beautiful building in America," as Smithmeyer and Pelz's Library of Congress was called when it opened 100 years ago, with enough objects to make it the world's largest repository of knowledge, growing at a rate of 7,000 items a day. Then cram into the edifice a staff large enough to service the readership and care for the growing collections, including, for instance, the papers of 23 U.S. Presidents, the manuscripts of innumerable Americans, the first printed book in the Western world and the earliest surviving copyrighted film, plus millions of maps, atlases, posters, microfilms, movies, rare books, digitized items, and taped radio and television broadcasts.

The result was a grand mess. By 1981, when renovation and restoration work began, many areas of the imposing building had become rabbit warrens of beaverboard and drywall cubicles for more than 4,000 people. The cubicles obscured ornate walls, and dropped ceilings covered many soaring vaults and painted tympanum tableaux. Some of this wealth had not been seen for 50 years.

"The building had been completely trashed," laments Arthur Cotton Moore, FAIA, whose architecture firm carried out the design under the supervisory and administrative direction of the Architect of the Capitol, the office ultimately responsible for the upkeep and improvement of the Library and other federal buildings committed to its care by Congress. Moore says there was no overlap of roles; his firm did the design, while the Architect of the Capitol served as contracting officer and supported Moore's work. "The Architect of the Capitol was also a sort of preservation officer for the building," explains Helen Dalrymple, the Library of Congress' public affairs specialist. The Architect of the Capitol "would place limitations on anything that might harm the integrity of the building."

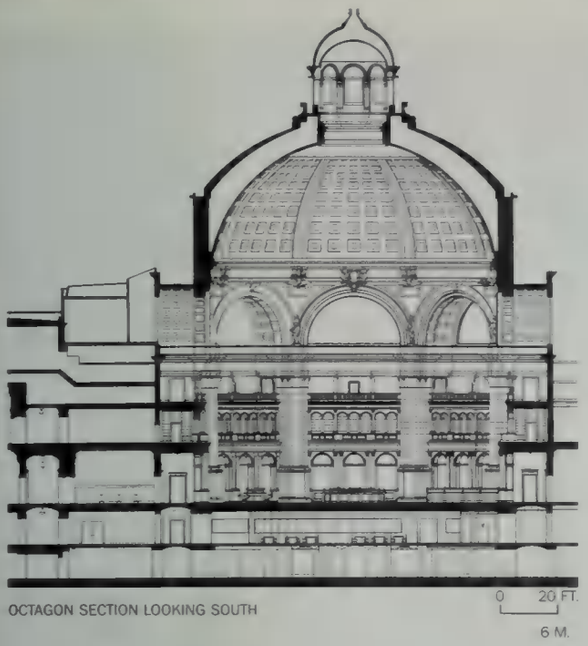
Moore says that one of his main concerns in restoring the national historic landmark and "bringing it into an unpredictable 21st century" was to safeguard it against becoming littered again in the future. The building's peculiarities as a national treasure-house and a working library dictated three additional requirements, explains Dalrymple: to improve the library's ability to accommodate tourists, while maintaining an ambience suitable to scholarly study; to upgrade outdated mechanical, electrical, and security services without blemishing richly detailed surfaces; and to restore abused and age-stained surfaces, fixtures, and artwork. Daniel J. Boorstin, the Librarian of Congress from 1975 to 1987, recalls that, "Our objective

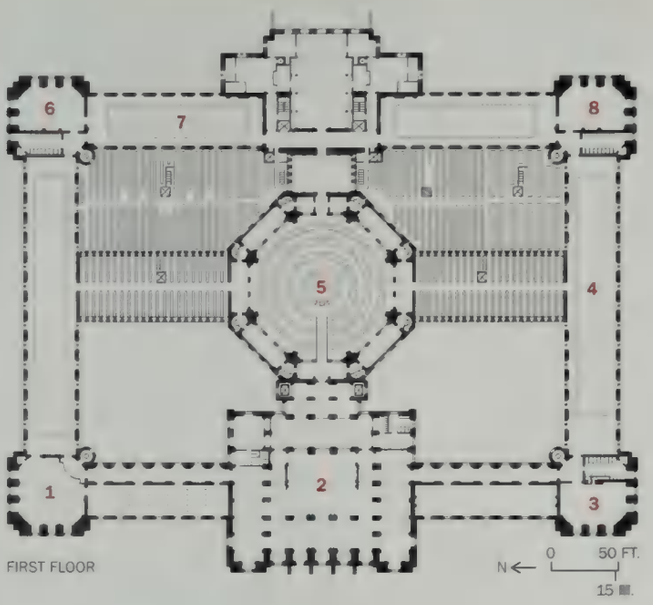




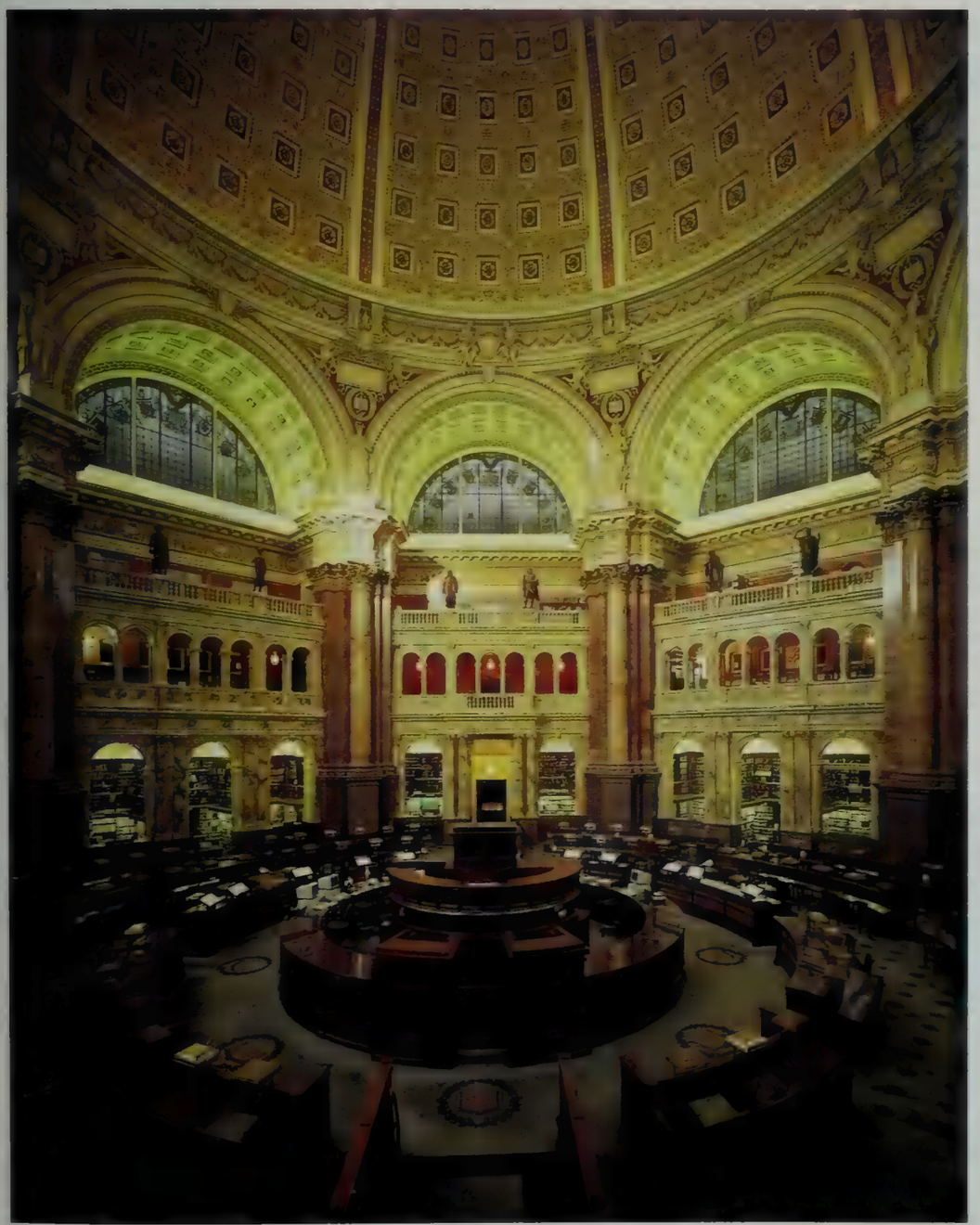
and Moore's was to recover the original beauty of the building. I think the effort was successful."

The building's original design began with a national competition won by John L. Smithmeyer and Paul J. Pelz, both immigrants who resolved to create a building that could rival the best in Europe, says Moore. Hence, the two-story, granite-clad structure's Italian Renaissance facades and its unusual configuration: It is a rectangle divided into four courts by a cross, at the intersection of which lies the building's heart, the 125-ft-high octagonal reading room topped by a gold-leaf dome, one of Washington's great rooms. To enliv-





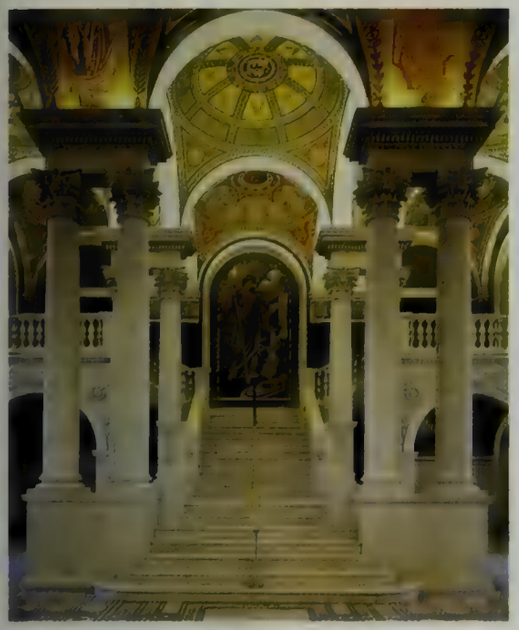
1. *Research services*
2. *Great Hall*
3. *Congressional reading room*
4. *Humanities reading room*
5. *Main reading room*
6. *Professional reading room*
7. *General reading room*
8. *Microfilm reading room*

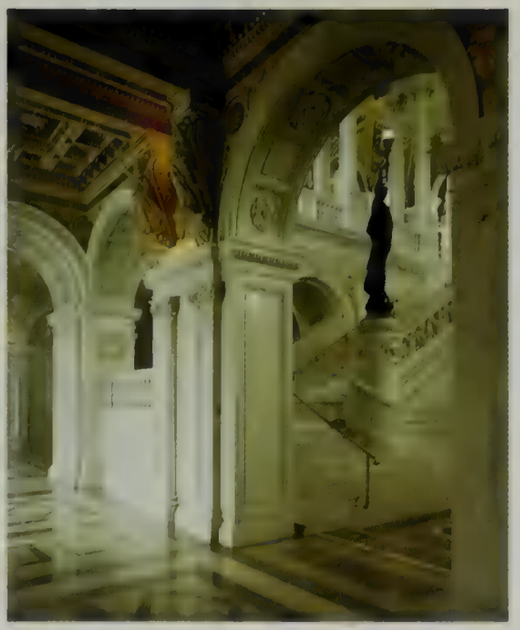


Office cubicles had overrun much of the library before renovations, and hung ceilings had cut off views of old vaulting and tympana (opposite below and above). The main reading room is a 125-ft-high octagonal space topped by a gold-leafed dome (left and section, above). The main entrance shows off Smithmeyer and Pelz's Italian Renaissance design (below).









On the stair leading from the Great Hall to the Visitors' Gallery, ■ marble mosaic of the Minera of Peace was restored (far left). A statue by Philip Martiny punctuates the Great Staircase (left). The architects restored elaborate vaulting, plasterwork, floors, and painted lunettes and tympana throughout the Thomas Jefferson and John Adams Buildings of the library, while at the same time upgrading mechanical, electrical, and security services. The Northwest Gallery (below) and the Great Hall (opposite) recapture the original glory of the building.

en otherwise unrelieved facades, the architects projected pavilions at each of the building's four corners and in the center of the east and west sides. This scheme resulted in an interior arrangement characterized by long peripheral galleries leading to formal spaces.

To create an assortment of mosaic floors, murals, statuary, bas-relief, stained-glass windows, and other decoration, the 19th-century federal government commissioned more than 50 artists, many of whom had worked together on the World's Columbian Exposition of 1893. In fact, the library was the first major American building to reflect the vision of the Chicago World's Fair.

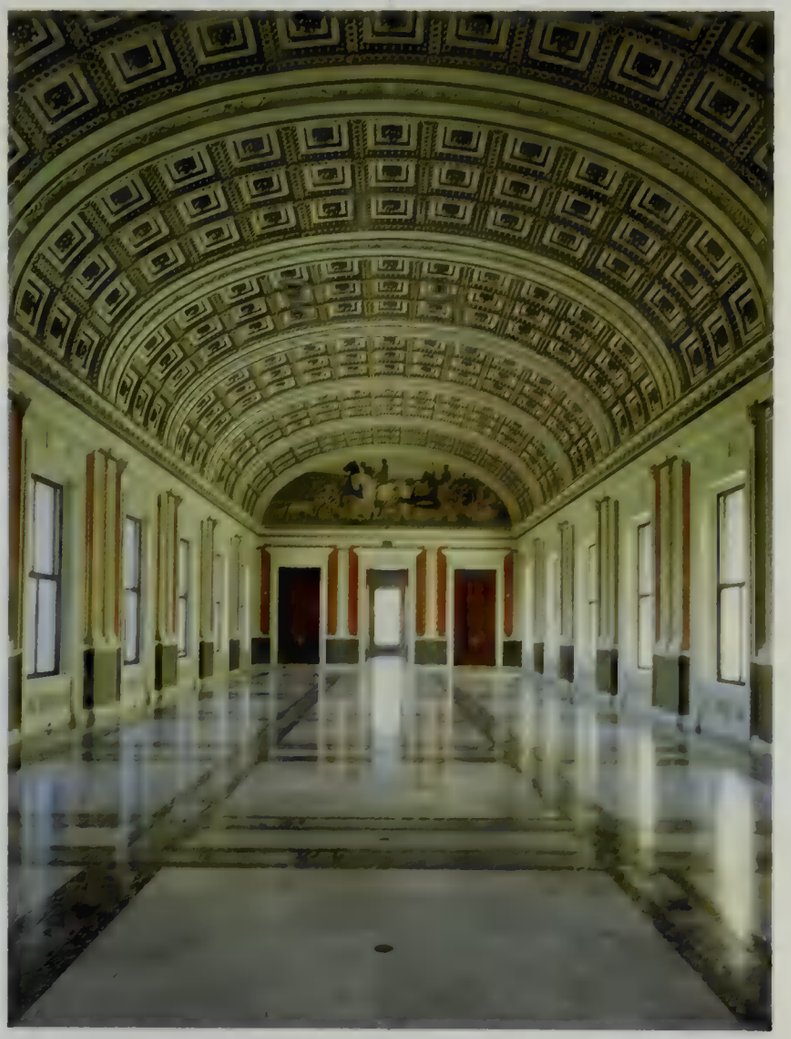
Crowding was a problem from the start, and by 1910 the building had expanded into the southeast courtyard. An Art Deco annex, designed by Pierson and Wilson and now called the John Adams Building, opened in 1939.

The commencement of the main building's current renovation depended on completion in 1980 of DeWitt, Poor, and Shelton's $123-million James Madison Memorial Building, Washington's third largest building. The Classicist Modern structure's 2,112,492 gross sq ft of space enabled it to absorb more than 3,500 staff members who had nearly burst the bounds of the original library, now called the Thomas Jefferson Building.

Moore led a team of eight consultants. Their efforts ranged from pure restoration through renovation to pure invention. Even in spaces such as the main reading room, the only major area that had not been subdivided or badly abused, they made significant—although largely invisible—changes. They hid new sprinkler heads and emergency lighting in Classical ceiling rosettes and molding. They concealed telecommunications cables in custom extruded-aluminum baseboards and had them faux-painted to match the originals of cast iron and mahogany. In some places they had mosaic flooring carefully removed so cables and wiring could be stowed underneath.

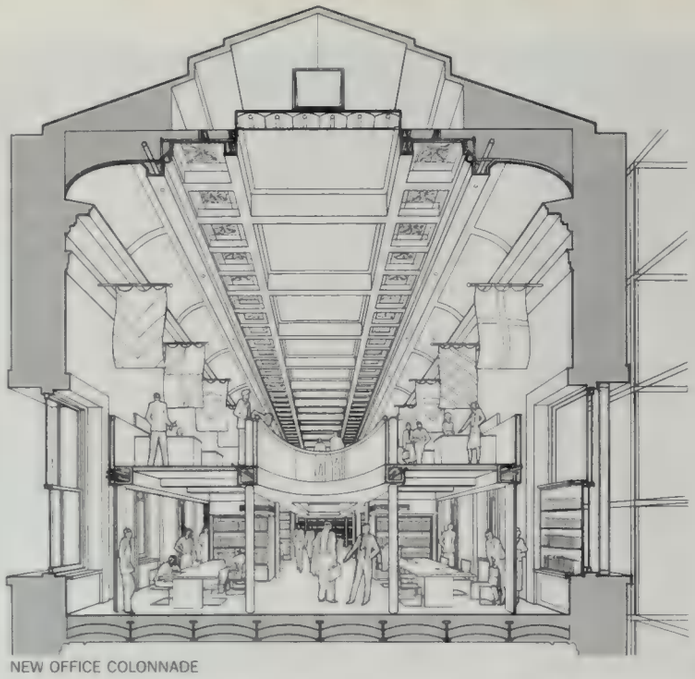
Thornier was the problem of creating ■ comprehensive, visually unobtrusive fire protection system for the reading room, which, Moore says, had been "protected by a couple of hand-held fire extinguishers." Before agreeing to the recommendations of a fire-protection consultant who insisted on compartmentalizing the room with glass partitions—and ruining it—Moore consulted a second expert who helped devise a system of sprinkler lines that inconspicuously follows the arched openings of the alcoves around the octagonal central space.

Among the library's several courageous acts, says Moore, was a decision to replace the reading room's card catalogue with computers, which made space for 44 additional reader desks and brought the total to 226. The architect and his team also arranged for the removal from the center of the room of a large "snorkel," as he calls the air-conditioning structure that sprouted from the floor and hovered over the reference desk. In addition, they inserted carpeting to dampen sound and ■ glass-enclosed, mezzanine-level viewing area to hush the voices of tourists.



New office colonnade (section, right) and mahogany "facade" in reading rooms (below). Restored dome above main reading room (bottom left); stained-glass skylights over the Great Hall (bottom right); and various corridors and rooms (opposite).





NEW OFFICE COLONNADE

Much of the work consisted of straightforward restoration. On the ground-level West Main Pavilion (also known as the Great Hall), for example, the restorationists returned yellowed columns and grimey murals and detailing to their original colors. A few steps away in the Congressional Reading Room, they stripped away sheet rock concealing outmoded mechanical equipment and uncovered a balcony. And throughout the building they restored woodwork, mosaics, desks, lighting fixtures, and other hardware, while more than 20 conservators cleaned and restored murals and stone and plaster architectural detail, including a variety of putti, eagles, dolphins, griffins, and other creatures. They also restored numerous homilies that served as guides for life in the 19th century but now seem as old-fashioned as the horse and buggy. Meanwhile, preservation architects Einhorn, Yaffee, Prescott assumed responsibility for the replacement and restoration of the building's windows. Moore estimates that overall, about two-thirds of the work consisted of pure restoration.



In contrast are Moore's solutions to the problem of containing office space to prevent the reappearance of warrens. They fall into the category of invention. He says he persuaded the library's administrators to designate many of the formal spaces as dedicated public areas and off-limits for office use.

At the same time, he says, he "reactivated" the concept of a set of subordinate reading rooms that have adjoining office space for scholars and staff. The architect carved out three identical book-lined and balconied reading rooms. The African/Mideastern and European rooms occupy galleries on the second floor. The Asian room is located in a first-floor gallery. Each reading room is subdivided by angular bookcases that double as ladders providing access to the books.

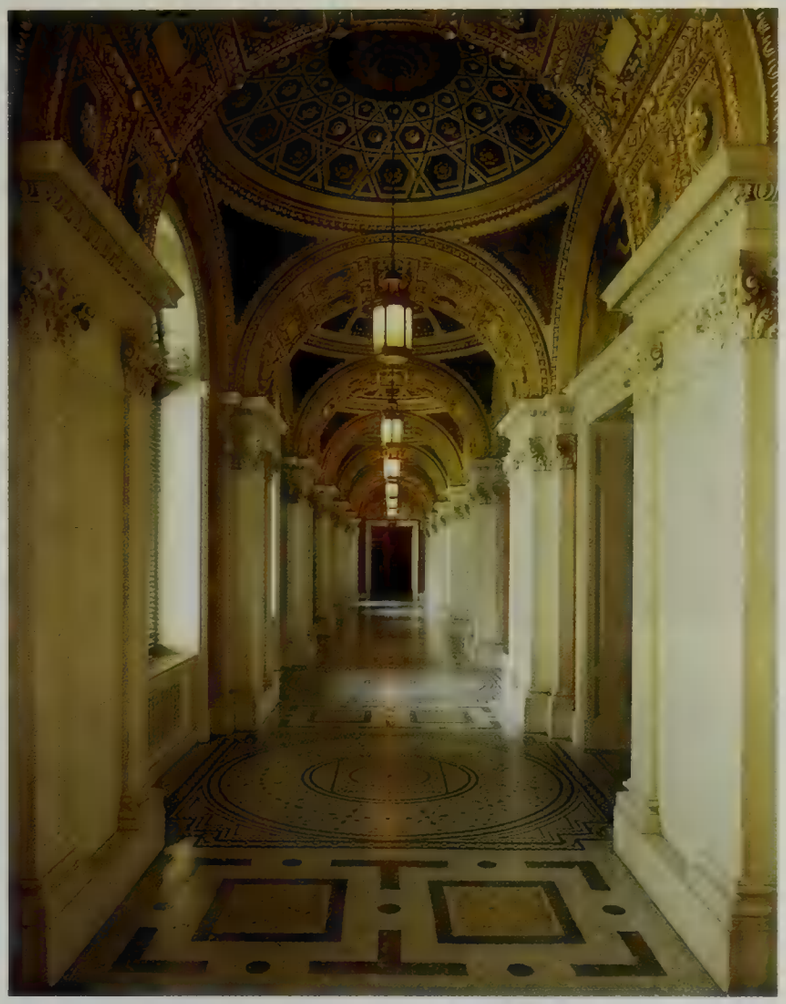


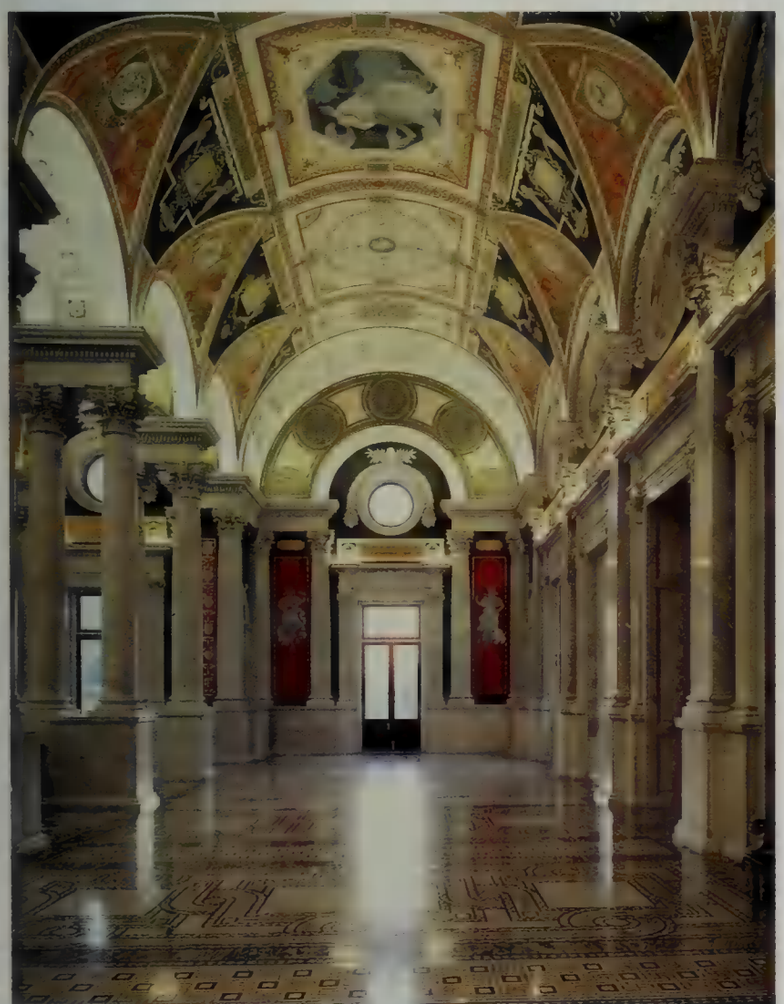
The dominant architectural feature in each reading room, however, is a mahogany "facade." It separates the study areas from adjacent two-story steel structures containing 3,570 sq ft of office space, "buildings within a building," as Moore says.

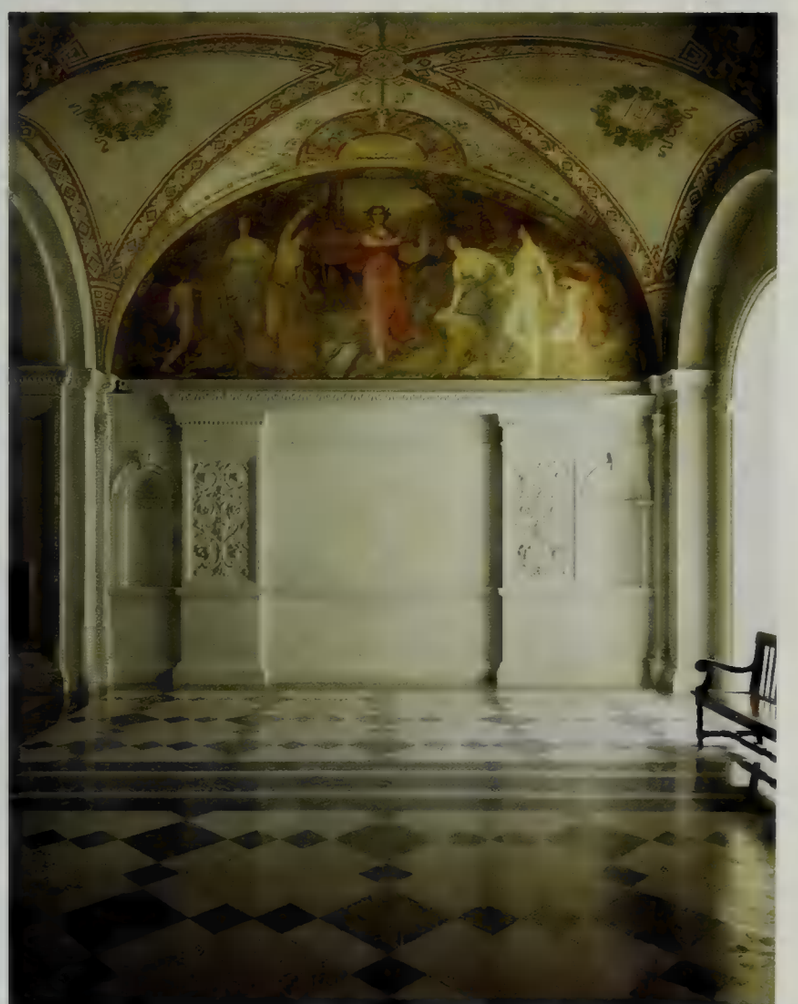
The facades take their cues from a Baroque commemorative arch on the first floor but also recall Moore's Postmodern buildings of the 1980s (such as Washington Harbour). The open space behind the facades will be partitioned according to need, using vertical tube-like supports to accommodate cables and other services.

On May 1, the date of the library's official reopening, the public will get its first glimpse of Moore's restoration and of his inventions. The exhibition "Treasures of the Library of Congress," will mark the occasion. And as is appropriate for an institution that is preparing itself for a new century and already records almost a million electronic transactions every working day, the exhibit will be available online at http://www.loc.gov/. ■









2 Orchard Street Church Baltimore, Maryland

NEWLY RESURRECTED, THE HISTORIC BUILDING CONTINUES ITS ACTIVE ASSOCIATION WITH BALTIMORE'S AFRICAN-AMERICAN COMMUNITY.

by Charles K. Hoyt, FAIA

Project: *Orchard Street Church, Baltimore, Maryland*
Client: *The Baltimore Urban League—Roger I. Lyons, president and chief executive officer*
Architect: *Kelly, Clayton & Mojzisek—Brian Kelly, AIA, partner-in-charge; George L. Mojzisek, preservation architect; E.H.D. Ching Stanton, project architect*
Associate architect: *Anthony N. Johns, FAIA*
Engineers: *Resti Designers, Inc. (structural); EGLI & Gompf, Inc. (mechanical and electrical)*
Consultant: *Mahan/Rykiel Associates, Inc. (landscape)*
Program manager: *Heery International*
General contractor: *Stuever Brothers, Eccles & Rouse, Inc.*

The Orchard Street Church in Baltimore, where freed slaves and their descendants prayed for nearly a century, will continue serving the African-American community, although in a different capacity, thanks to the rescue efforts of the Baltimore Urban League. The church, abandoned 20 years ago, is being restored as a community center by joint-venture architects Kelly, Clayton & Mojzisek (KCM) and Morgan State University architecture chairman Anthony Johns.

Background

The present structure dates from 1882 and is the third church on the site. All three were built by free African Episcopal Methodists starting in the early 19th century. The Baltimore Urban League, the oldest African-American service and advocacy organization in the city, will use the building to house many of its workers, and for meetings, exhibitions, and educational programs.

The 1882 church was designed by architect Frank Davis. He worked in exuberant high-Victorian eclecticism, applying a free-wheeling mix of elements to the brick-bearing-wall, wood-and-steel frame structure. The interior of the ambitious 8,000-sq-ft edifice was much plainer. The floors and pews were hand-hewn pine. Flat plaster walls lacked the raised molded ornament popular in the period.

In 1903, the congregation more than doubled its floor space with a new Sunday-school wing in back of the sanctuary. For the school's design, the construction committee turned to another fashionable Baltimore architect, Francis Tormey. He produced a three-story structure containing two floors of classrooms and, on the top floor, a double-height auditorium. Clearly the church's fortunes had risen. Wood trim throughout was first class, and the auditorium had a richly decorated plaster ceiling.

But some 20 years ago, the congregation had outgrown even the expanded building. It celebrated a last service in its historic home and, after a final hallelujah, slammed shut the massive wood doors, some thought forever. The flock moved to a new, larger home two miles away. Soon, new tenants moved in—the homeless. They built fires on the floors to stay warm. Windows broke and sections of roof collapsed. For the next 17 years, the building continued to disintegrate as various organizations, including other churches, struggled to raise funds to save it.

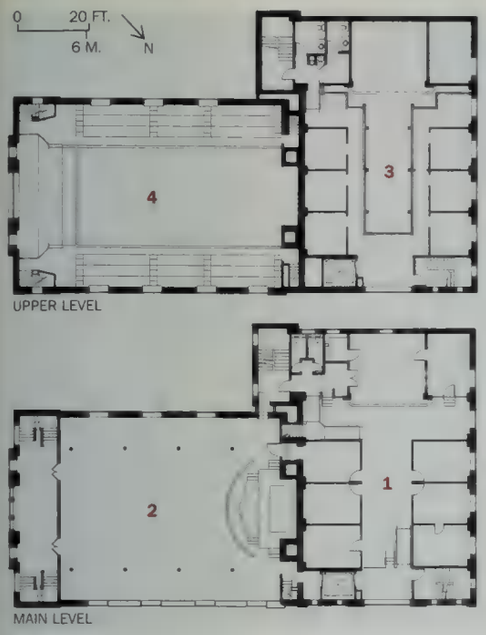




The current client

Enter the Urban League, whose 200 workers occupied windowless space in the basement of a shopping center. League president Roger Lyons was quickly developing a broad range of community offerings; he needed more space. And, as he enthusiastically led his board of directors through Orchard Street's charred remains, he also saw how the building's continued association with African-American causes could benefit the League.

Lyons and his board put together a complex package of state, federal, and private funding



1. *Executive offices (classrooms and administration below)*
2. *Sanctuary (mechanical below)*
3. *Mezzanine level of executive offices.*
4. *Balcony and choir loft in sanctuary*

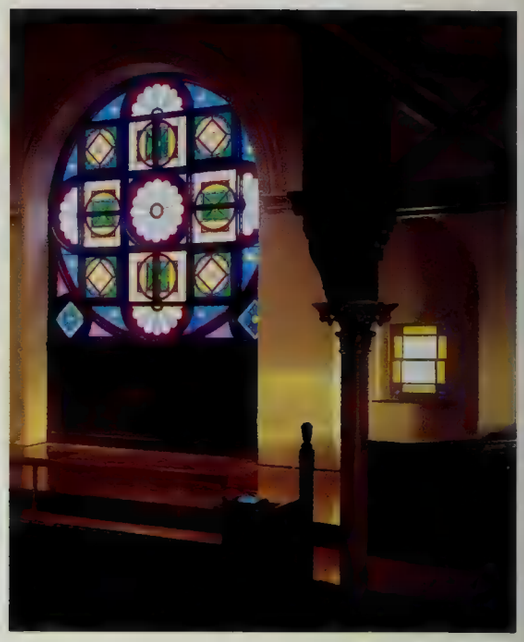
The building's desperate state when the Urban League took it over (opposite left) showed few signs of hope except for the organization's bright equal-opportunity flag. Major additions include the simple forms of the Sunday school (below)





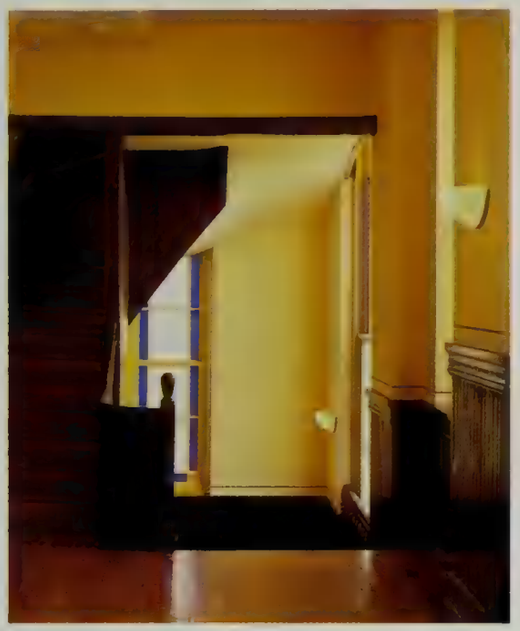
Much of the architects' work involved restoration and replication—even using rough-hewn carpentry to match the original in the sanctuary (this page). Interpretive-design in this room included leaving originally painted wood trusses exposed (below), rendering them a dark, dominant design element in contrast with the walls.











During construction, workmen discovered a tunnel, not two feet across nor high, once connected with a Catholic monastery a block away as part of the underground route for escaped slaves. Today there is a viewing area into the tunnel (right) under the Sunday school. The rusting chains of the stair railing are symbolic as are the rough-formed walls.

for the $3.7-million restoration. The League's procedure to complete the task was well considered. Heery Project Management, a division of Atlanta-based Heery International, Inc., was commissioned to draw up a design RFP, attracting more than 50 applicants. KCM and Morgan State's Anthony Johns got the job.

Existing conditions

Despite the existing shambles, KCM's team, working with Heery and general contractors Struever Brothers, Eccles & Rouse, was able to discover far more about the original building than at first seemed possible. Only several feet of plaster remained on the Sunday school's auditorium ceiling; it was enough to piece together the original design. Core samples of the remaining plaster in the sanctuary were examined with a spectro microscope to analyze the original decoration under many coats of charred paint. This revealed that Davis had compensated for the room's plainness with color—purple columns to support the sanctuary mezzanine and ocher walls highlighted by stenciled patterns of red, mauve, silver, and aqua. Shards of colored glass left dangling in the missing rose window over the alter contained enough evidence to trace the design to a standard pattern of the era. The replacement glazing required pieces fired as many as seven times.

New work

KCM partner Brian Kelly believes some interpretive-design during restoration best underscored Davis's original intentions by giving the building a stronger character (caption opposite). Excavation to shore up foundations under the Sunday school revealed the biggest surprise. The architects confirmed the legend that an earlier 19th-century African Episcopal Methodist church on the site was a link in the underground route for escaped slaves (caption above).

Because of the client's needs, some architectural work went beyond restoration into redesign for adaptive reuse. Morgan State's Johns worked side-by-side with KCM's team members to produce preliminary designs for this new work. The greatest design challenge came in locating the new classrooms and headquarters offices.

The architects' recommendation was that the first two floors of the Sunday school be used for the new purpose because they had always been divided into separate rooms. Original woodwork could be rescued and matched where missing. But these floors offered only 5,000 sq ft of space—not nearly enough to house the League's 200 full-time workers as well as educational programs and other activities that were to draw up to 600 visitors a day into the former school.

Challenges

The solution that delighted the League's board presented major problems for the architects. It was to use the double-height top-floor auditorium on the third floor of the Sunday school to accommodate the executive offices and make up the rest of the needed floor space. The plan called for turning the stage into a board room and placing offices in the former seating area. The possible number of offices would be doubled by placing them on two levels created by building a new mezzanine. But the visual impact of the mezzanine when seen from the outside of the building risked running afoul of the Maryland Historic Trust. The Trust had to approve the authenticity of the exterior renovation to qualify it for tax credits.

At the same time, the League board wanted to enlarge a small original window at the back of the stage to bring more daylight into the boardroom. But a new window would create a definite impact on the exterior's integrity. While not entirely satisfied with the mezzanine, the Trust members agreed to approve it as an exchange for retaining the small window. Lyons says that KCM's ability to negotiate the trade-off was an example of how the architects continued to build the board's trust during the the course of the project.

Result

While the board wanted the sanctuary faithfully restored to its original character, it intended to install an educational museum of African-American history in the space. But the space is becoming so popular for meetings, social events, and temporary exhibits that the board may give up the idea of a permanent installation. Similarly, the fellowship hall downstairs was to be divided into vocational training spaces, but it is being used for so many community events that the league has transferred vocational training to its former offices; the hall remains one room. Typical of any restoration, fine tuning goes on in Orchard Street Church over a year after substantial completion. ■

Manufacturers' Sources
Brick: *Baltimore Brick*
Asphalt shingles: *Certain Teed*
Windows: *Pozzi*
Glazing: *PPG*
Hardware: *Schalge*
Pressed-metal ceilings: *Chicago Metallic*
Paint: *Benjamin Moore*
Plastic laminate: *Formica*
Hydrolic elevator: *Dover*
Plumbing fixtures: *American Standard*
Statistics: *Building area: 29,000 sq ft*
Cost of renovation: $3.7 million

Geary Theater San Francisco, California

A FAVORITE SAN FRANCISCO THEATER MAKES AN ENCORE PERFORMANCE

by Stanley Abercrombie, FAIA

Project: *Geary Theater, San Francisco, California*
Owner: *American Conservatory Theater*
Architect: *Gensler and Associates/San Francisco—Charlie Krider, AIA, partner-in-charge; R.K. Stewart, AIA, project director; Brian Shiles, AIA, architectural designer; Luke Sheridan, project architect; Corey Creath, AIA; Jennifer Galvin, Michele Sheehan, Kelly Griffin, project team*
Engineers: *SOH & Associates (structural); Cammisa & Wipf (electrical); Guttman & MacRitchie (mechanical)*
Consultants: *Theater Projects Consultants (theater); Page & Turnbull (historical); Conrad Schmitt Studios (historical research); Deborah Cibilich (interiors); Paoletti Associates (acoustical) Auerbach and Glasow (lighting); Esherick, Homsey, Dodge & Davis (preliminary design)*
Construction manager: *Cahill Contractors*

It must have seemed like a scene from Phantom of the Opera, but it was no illusion: the steel light-bridge spanning the front of the stage swung crazily over the orchestra and fell, bringing with it most of the proscenium and a large part of the roof. Fortunately, it was a couple of hours before the evening audience would have begun arriving; it was October 17, 1989, and the cause was the Loma Prieta earthquake.

An illustrious past

The Geary, host to such legends as Sarah Bernhardt, Paul Robeson, and Lawrence Olivier, and, in the 1960s, the musical Hair, has been home to the American Conservatory Theater (A.C.T.) for the last three decades, and on the National Register of Historic Places for the same period. The structure was built in 1910 as a replacement for an earlier theater destroyed in the earthquake of 1906. Its designers were the firm of Bliss and Faville, who practiced in San Francisco from 1898 to 1925. Other work includes the nearby St. Francis Hotel. Partner William B. Faville, trained in the office of McKim, Mead & White, was national president of the AIA.

Stanley Abercrombie is a Fellow of the AIA and the American Academy in Rome. He is former editor-in-chief of three design magazines and holds awards for both design and journalism.

Repairing the damage

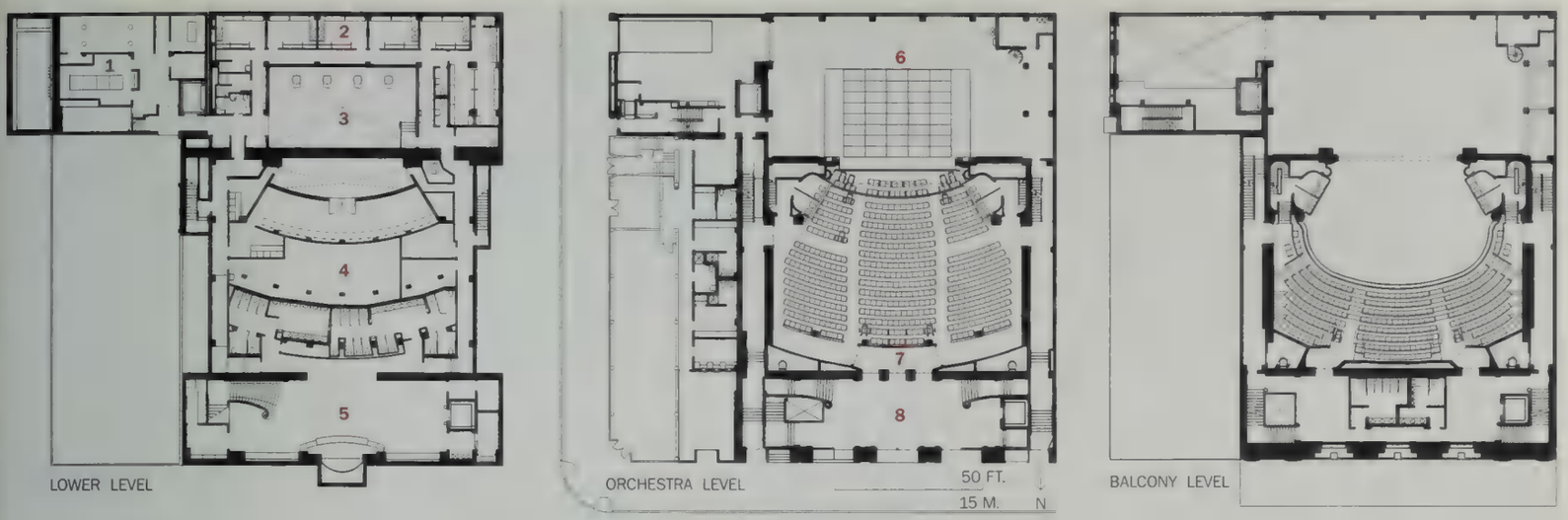
From the Geary's wreckage has now risen a largely new theater, combining assets of the Beaux-Arts original with features never imagined in 1910. It is the work of Gensler and Associates Architects, based partly on 1990 preliminary studies by Esherick, Homsey, Dodge and Davis.

Gensler's first charge, according to project director R. K. Stewart, AIA, was seismic upgrading. This was accomplished primarily by the insertion of three transverse-shear elements: steel bracing added to the back wall of the stage, reinforced-concrete shear walls at each side of the proscenium, and a new 22-in.-thick shear wall, from footing to rebraced roof, between the auditorium and the front of the house. The disadvantage of the location of this new superwall is that it reduced the auditorium size from 1,380 seats to 1,035; the advantage, however, was that the lobby could be made more expansive and an entirely new upper lobby (with bar) could be carved out of the building shell. In any case, the seats lost were those deemed least desirable and least often sold.

Safety and ADA

A second charge, according to Stewart, was safety and accessibility. Added to the landmark structure are sprinklers, alarm bells, visual warning devices, elevators (both front-of-house and backstage), ramps, and wheelchair seating areas at the front and rear of each level. "We followed the spirit, not just the letter of the ADA requirements," Stewart says. Function has also been improved. For the patrons, the seating (most was existing, but repainted, reupholstered, and relit) has been given a new staggered placement, with increased leg room, wider aisles, and generally improved sight lines. Two quite grand stairways from the lobby have replaced older "dingy" ones, the ceiling height of the lower-level lounge has been raised (by lowering its floor level), the upper-level lounge has been created from scratch, and an infrared listen in system has been installed.







1. *Support*
2. *Dressing*
3. *Trap*
4. *Storage and mechanical*
5. *Lower lobby*
6. *Stage*
7. *House*
8. *Street lobby*

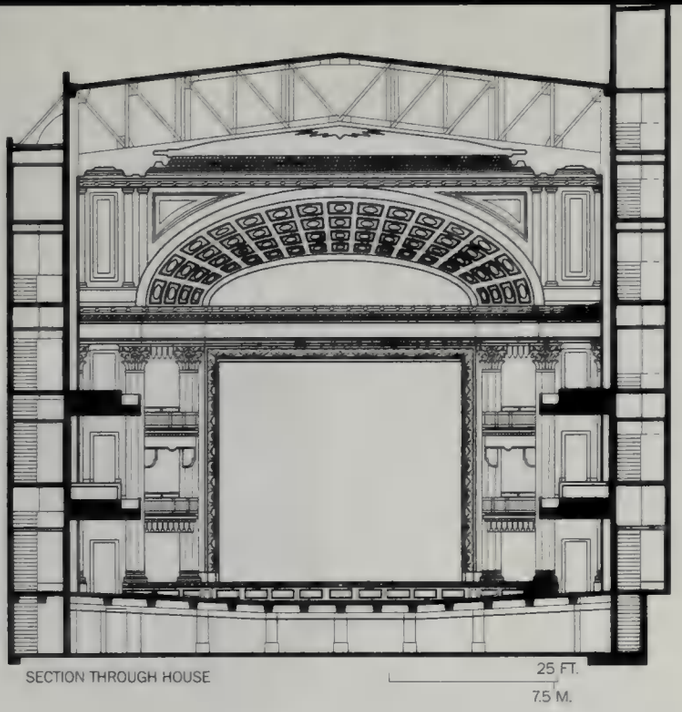
The exterior facade on Geary Street was considered inviolate, and the work there was limited to cleaning, and repairing the windows and the terra-cotta surfaces.





A steel fly grid (left) and counterweighted rigging replaced the old backstage equipment, that used a wooden grid, ropes, pulleys, and sandbags.

Based on vintage photographs, and painstaking research to determine paint colors, details in the auditorium (opposite) including the proscenium and a gilt wooden sunburst light fixture, were duplicated.



A modernized backstage

Other improvements are hidden but numerous: a hydraulically operated orchestra pit, backstage equipment, new dressing rooms below the stage, a new scenery loft (with its own elevator) beside the hydraulically-rakeable stage, a new control booth at the rear of the top balcony, and modern air conditioning and lighting. This last, most obviously represented by two lighting standards snuggling against the great Corinthian columns that frame the stage, has been made as unobtrusive as possible, but is unfortunately far from invisible.

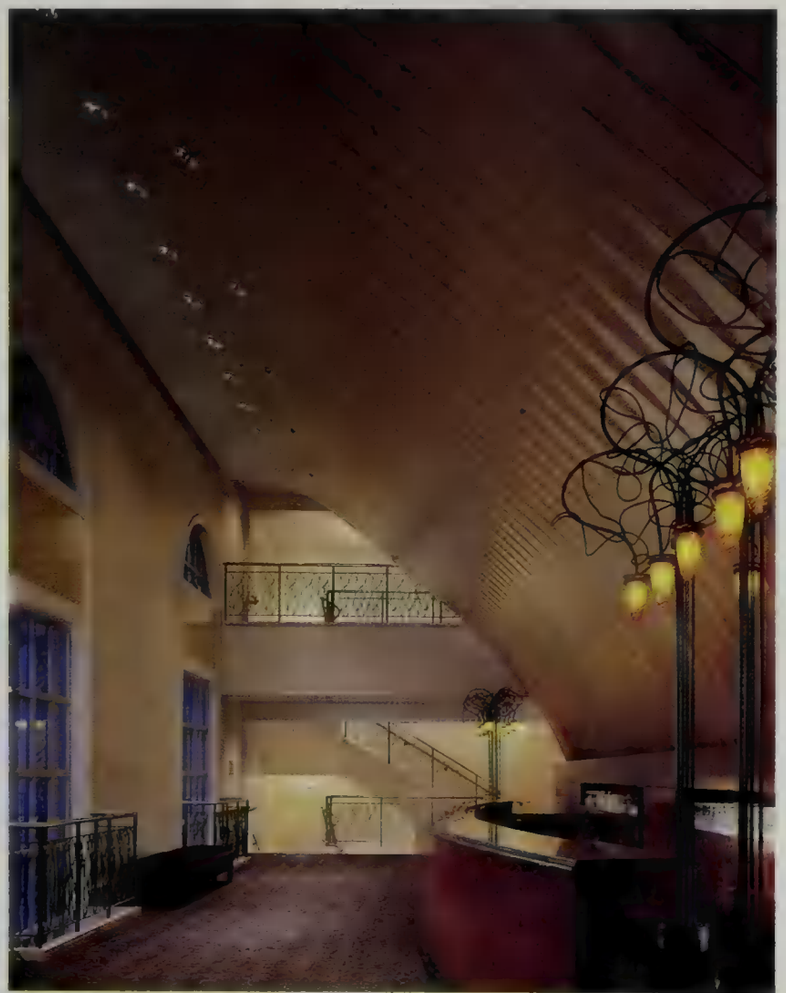
But the most intangible and the most demanding part of A.C.T.'s program for Gensler was to "keep the magic." The Geary was famous for its acoustics and its intimacy, a favorite with actors and public alike. Reopened just over a year ago, it still is. The acoustics, while admittedly not perfect from every seat, are still admired, and the decreased distance from stage to last row of seats has even increased the theater's intimacy. But another important factor in the Geary's "magic" is visual, with part of its present appearance faithful to the original, part of it new.

Interior work

Inside the auditorium, as well, the past prevails. Relying on vintage photographs, the Gensler team has reproduced in glass-reinforced plaster the splendid proscenium, a gigantic version of an egg-and-anthemion molding, and overhead the great central lighting fixture, a sunburst of gilt wood, has been rebuilt. Decorative details throughout have been carefully reproduced, including some wood wainscoting added in the 1930s. Original paint colors were unearthed by the detective work of the Conrad Schmitt Studios of Wisconsin, and these hues—red, gold, aubergine, and mauve—have been reused, but in the softer tones appropriate for today's lighting and today's taste.

In the newly reconfigured lobby,original elements (such as door and window frames) happily coexist with modern ones, and in the new bar area on the mezzanine above everything is freshly conceived. The carpet patterns, the boldly scaled pendant lighting fixtures and tall torchéres, the spirited scrolls of the stair parapets and railings—details that Stewart attributes to interior designer Debra Cibilich—manage the trick ofappearing new but not irrelevant to the grand flourishes of the 1910 Beaux Arts Theater. ■





Manufacturers' sources:
Seating: *Kroll Furniture*
Flooring: *Brinton's (carpeting)*
Light fixtures: *Shaper Lighting; Edison Price; Prescolite; B.K. Lighting; Litelab; Nova; LSI; Visa Lighting; Bega*
Statistics: *Cost: $27.5 million*
Square footage: 54,000

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NWWDA
NATIONAL WOOD WINDOW AND DOOR ASSOCIATION

AIA/ARCHITECTURAL RECORD
Continuing Education Series

SPECIFYING WOOD WINDOWS AND DOORS: FROM INSIDE OUT

Specifying windows and doors from a manufacturer was once an easy task. After all, windows and doors traditionally were made of wood, and in the early years manufacturers offered only a few basic sizes and shapes. Depending on the craftsmanship and type of wood used, the products were simply rated "good, better, and best." Now, life is not so simple — window and door selection is much more complex. Options in size, shape, style, and product components have proliferated.

How does an architect begin to assimilate all the information on current options for wood windows and doors? Where can an architect turn for assurance about product quality? That's where the National Wood Window & Door Association (NWWDA) comes in. NWWDA is comprised of the country's leading producers of wood sash, frames, window units, flush doors, stile and rails doors, and sliding and swinging patio door units, as well as producers of the numerous other materials required to manufacture the industry's products. As a professional trade organization, it formulates and promotes high standards of quality for the industry.

To facilitate the process of selecting wood windows and doors, NWWDA offers this compendium in association with the AIA/ARCHITECTURAL RECORD Continuing Education Series. Architects can earn two continuing education credits by reading the section, studying the learning objectives and answering the questions on page 134. More information on NWWDA, its standards, testing procedures, and information literature can be obtained from NWWDA, 1400 E. Touhy Ave., Des Plaines, Ill. 60618. (847) 299-5200. Or visit NWWDA's website at http://www.nwwda.org.

Learning OBJECTIVES

After reading *Specifying Wood Windows and Doors: From Inside Out* and completing the following exercise, you will be able, from a design or specifications perspective, to:

- Distinguish at least five new trends in the composition of windows or doors.
- Determine five or more results from specific veneer cutting and matching methods.
- Discuss two examples of door manufacturing processes with safety and welfare implications for designers.
- Identify three NWWDA standards and at least six tests for specifying doors and windows.

THE Enduring QUALITIES OF WOOD

The use of wood as the prominent material for windows and doors reaches back to the first American settlers, who relied on wood construction techniques brought from Europe. While building technology has evolved significantly since then, wood has remained the dominant material for windows and doors. Why? Few materials can match its natural beauty, as revealed in its texture, grain and color. For designers, wood is a flexible tool, in that wood can be molded easily into different shapes and sizes. And, the material ranks high in thermal performance. In fact, tests show that as an insulator, wood is 400 times more efficient than steel and 1,800 times more efficient than aluminum. Additional benefits include ease of operation and resistance to air and water infiltration. Wood does not rust or corrode, and when treated with chemical preservatives is extremely resistant to decay and dimensional changes such as swelling, shrinking, and warping.

Today's responsible forestry practices make wood an exceedingly attractive building material. That's because nine times more energy is needed to produce a steel door than a wood door. Aluminum doors consume five times more energy. Wood is a renewable resource, an environmentally friendly resource, supporters argue; they have turned to well-managed forests for their products.

For many years, manufacturers have combined different materials with wood for the purpose of performance and durability. Take aluminum and vinyl clad windows. Such products now represent about 75 percent of residential wood windows sold annually. Yet, through it all, wood remains the main component and likely will continue to be.

Even so, the industry is changing and searching for new ways to stretch raw materials. For example, many manufacturers now use smaller pieces of wood that would have been discarded or burned in the past as finger-jointed components in window frame and sash areas that are hidden from view. Composite materials are used in much the same way — wood fibers are combined with various types of resin or plastic and used as components in out-of-view places.

Specifying Wood Doors and Windows. At first glance, the specification of wood windows and doors may seem daunting. Possibilities seem endless. To simplify the task, try approaching the process as a child might when taking apart a parent's watch for the first time. Pull apart the pieces, study them carefully, and then delicately put them back together. Once all the various components are examined and analyzed, each successive breakout is faster and easier. The specification of flush wood doors, stile and rail wood doors, and wood windows requires a different process, and, therefore, each are explained separately here.

SPECIFYING WOOD WINDOWS AND DOORS: FROM INSIDE OUT

Tips on Finishing Wood Products

Wood is hygroscopic—in other words, moisture in the environment can influence the dimensional integrity of wood products. Therefore, it is paramount that wood windows and doors be finished with precision. A condensed version of NWWDA's finishing tips include:

1. Before finishing, remove all handling marks, raised grain, scuffs, burnishes and other undesirable blemishes.
2. Eliminate the use of steel wool on bare wood, as well as rusty containers or other contaminates in the finishing system.
3. A thinned coat of sanding sealer may be applied prior to sanding.
4. All exposed wood surfaces must be sealed.
5. Avoid dark-colored finishes.
6. Apply an oil-based coating, as water-based coatings on unfinished wood may cause veneer splits, highlight joints and raise wood grain.
7. Be sure the finished surface is satisfactory in both smoothness and color after each coat. And allow adequate drying time between coats.

Specifying WOOD FLUSH DOORS

Because of the vast choice of wood types and veneer finishes, wood flush doors offer the designer a wide variety of aesthetic expressions. Flush doors are also widely used for special purposes, such as fire retardant and sound-retardant doors. Basically, wood flush doors have flat surfaces with several internal construction options.

Internal construction. Solid core doors have cores of wood blocks (called stave lumber), particle board, or mineral cores and are 7-ply, 5-ply, or 3-ply construction. Solid cores can be glued block, framed glued block, framed nonglued block or stile and rail. Solid particleboard cores include mat-formed wood particleboard and mat-formed particleboard of other lignocellulosic materials. Lined cores include solid wood cores of any type mentioed above with the addition of two core liners of wood, compressed corrugated fiberboard, mat-formed wood particleboard, or hardboard. Mineral core doors are specifically used for fire doors.

There are two types of interface between the core and the vertical edges in solid core doors:

- Bonded. Vertical and horizontal edges of solid and mineral core doors must be securely bonded to the core with adhesives and then abrasively planed before the veneer is applied to ensure minimal telegraphing of parts through the veneer.
- Nonbonded. The maximum gap between core and vertical and horizontal edges is 1/32 inch (0.8mm). Component size thickness tolerance is ± 0.005 inch (0.1 mm) to ensure minimal telegraphing of core parts through the veneer.

Hollow core doors have a ladder core or a mesh or cellular core that provides a uniform cell size between the door skins and supports the entire skin surface. Hollow doors are made of a 3-ply plywood laminated to each side of a stile and rail to form a 7-ply door. Hollow-core doors should not be used as entry doors for security and air and sound infiltration reasons.

Surface appearance. The aesthetics of a door's surface are determined by the species of wood it is made from and the veneer cut, veneer matching, applied molding, and laminate facing. Types of wood commonly used include ash, white birch, natural birch, maple, poplar, walnut, cherry, African and Honduras mahogany, red and white oak, pecan and hickory. Three grades of veneer are available — AA, A, and B. In some cases, the end user's requirements may exceed the specifications of premium grade doors.

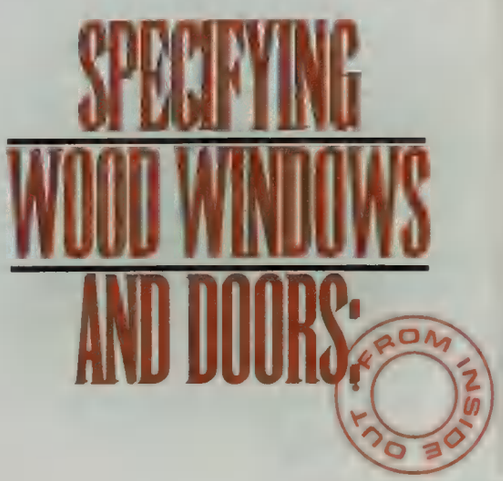
The veneer's appearance or pattern depends on how the log is cut in relation to its annual rings. Five different cutting techniques are common:

- Rotary cut. The log is center mounted in the lathe and turned against a razor-sharp blade. This cut follows the log's annual growth rings and produces a bold grain. Matching rotary cut veneer joints is extremely difficult since the grain is usually very wide.
- Plain slicing. This involves mounting a half log with the heart side flat against the guide plate of the slicer and cutting down through the center of the log. The appearance is similar to plain sawn lumber. If individual pieces of veneer are kept in the order they are sliced, this permits a natural grain progression when assembled.
- Quarter slicing. A quarter log is mounted on the guide so the growth rings strike the knife at approximately right angles, producing a straight grain appearance. "Flake" or "fleck" is also a characteristic produced by quarter slicing and is required in a quarter cut face veneer.
- Half-round slicing. The log is mounted off center in the lathe, resulting in a cut slightly across the annual growth rings, a method most often used on red and white oak.
- Rift-cut. Used for oak, the cut slices slightly across the medullary rays and produces a veneer distinguished by a tight, straight grain.

In manufacturing doors, four methods for matching veneers are common:

- Book matched. A process in which every other piece of veneer is turned over, so adjacent leaves are opened as

Continued on p.126

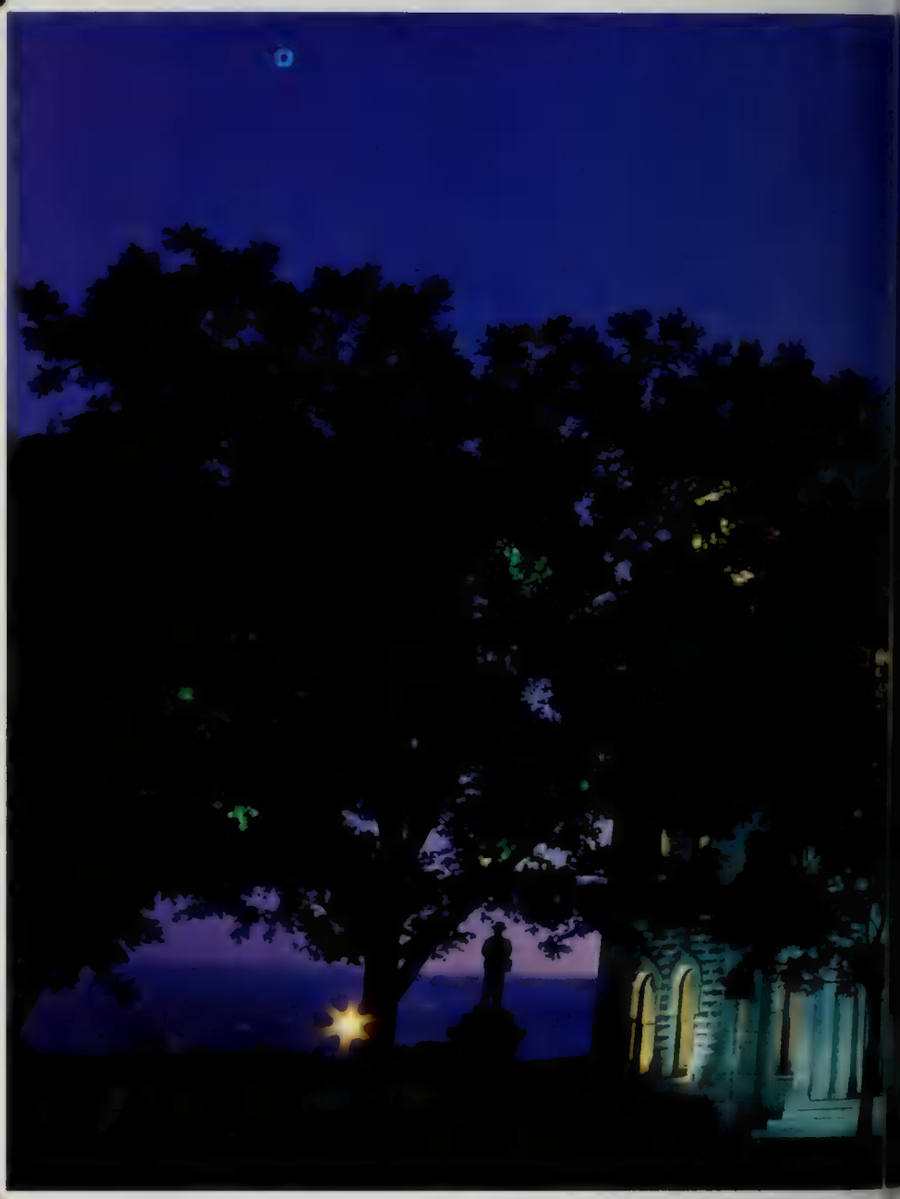


Wood Flush Doors Specification Checklist

Having established some of these basic definitions, specifying architectural wood flush doors becomes a rather straight-forward process. In fact, NWWDA offers the following concise checklist. Each requirement corresponds to a specific segment of the NWWDA Industry Standard I.S. 1. Some particulars are described here, while others can be found in greater detail in that document.

1. Indicate sizes and configurations.
2. Select types of hollow or solid core required.
3. Select number of plies (3, 5, or 7).
4. Select type of glue bond — Type I for exterior doors or high humidity climates; Type II for interior doors.
5. Select face material — veneer, plastic laminate, hardboard or other.
   a. For veneer: select species, cut, grade, matching.
   b. For plastic laminate: select color, finish, manufacturer.
   c. If hardboard: for interior or exterior use.
6. Tolerances: Check for compliance with prerequisites, so that warp tolerances will apply, as follows:
   a. If veneer, same on both faces.
   b. Design of cutouts:
      1) Cutouts for lites and louvers: at least 5 inches from any edge.
      2) Area of cutouts not greater than 40 percent of face of door.
      3) Cutouts not to exceed half the height of the door.
   c. 1 3/8-inch thick doors are not larger than 3x7 ft.
   d. Doors are specified to be properly installed and to swing freely.
7. Stiles and Rails: Indicate special requirements, such as greater than standard dimensions or, for hollow core doors, limitation to wood material only (not fiberboard).
8. Finger Jointing: Specify any desired limitations.
9. Edge Banding: Specify if desired; specify matching species; specify matching within species for color.
10. Blocking: Specify size, locations of blocking other than standard lock blocks for hollow core doors.
11. Sanding: Specify more stringent standards if desired.
12. Special Construction: Note requirements for the following:
    a. Fire protection ratings.
    b. Acoustical ratings (STC).
    c. X-ray resistant construction requirements (lead sheet thickness).
    d. Other special construction.
13. Options: Note the requirements for the following;
    a. Water repellent preservative treatment.
    b. Standard prefitting (for width).
    c. Extent of other prefitting.
    d. Extent of factory cutouts.
    e. Extent of factory hardware preparation.
    f. Extent of factory finishing (type of finish and surfaces to be prefinished).
    g. Special blocking (such as closers).
14. Indicate hardware locations, if nonstandard.
15. manufacturer/contractor warranty requirements.
16. Specify field operations. Environmental controls, storing, handling, finishing, installation.
17. Note requirements for maintenance instructions to owner.

WHEN IT CAME TO RENOVATING THIS HISTORIC COURTHOUSE, EVEN THE



In 1964, The Parker County Courthouse in Weatherford, Texas was designated a Texas Historic Landmark. And thus began the slow, methodical process of restoring it. First to receive attention was the structure's limestone stonework. Later, the roof was replaced. Then came the windows, which proved to be one of the most challenging aspects of the project.

The Historical Survey Committee mandates that if nothing remains of a historic building's original windows, the new ones must be faithful reproductions, right down to the last detail. Since the courthouse's original wood windows had been replaced by aluminum ones some years back, that meant that all 105 of the new windows had to be virtually identical to those made and installed over a century ago.

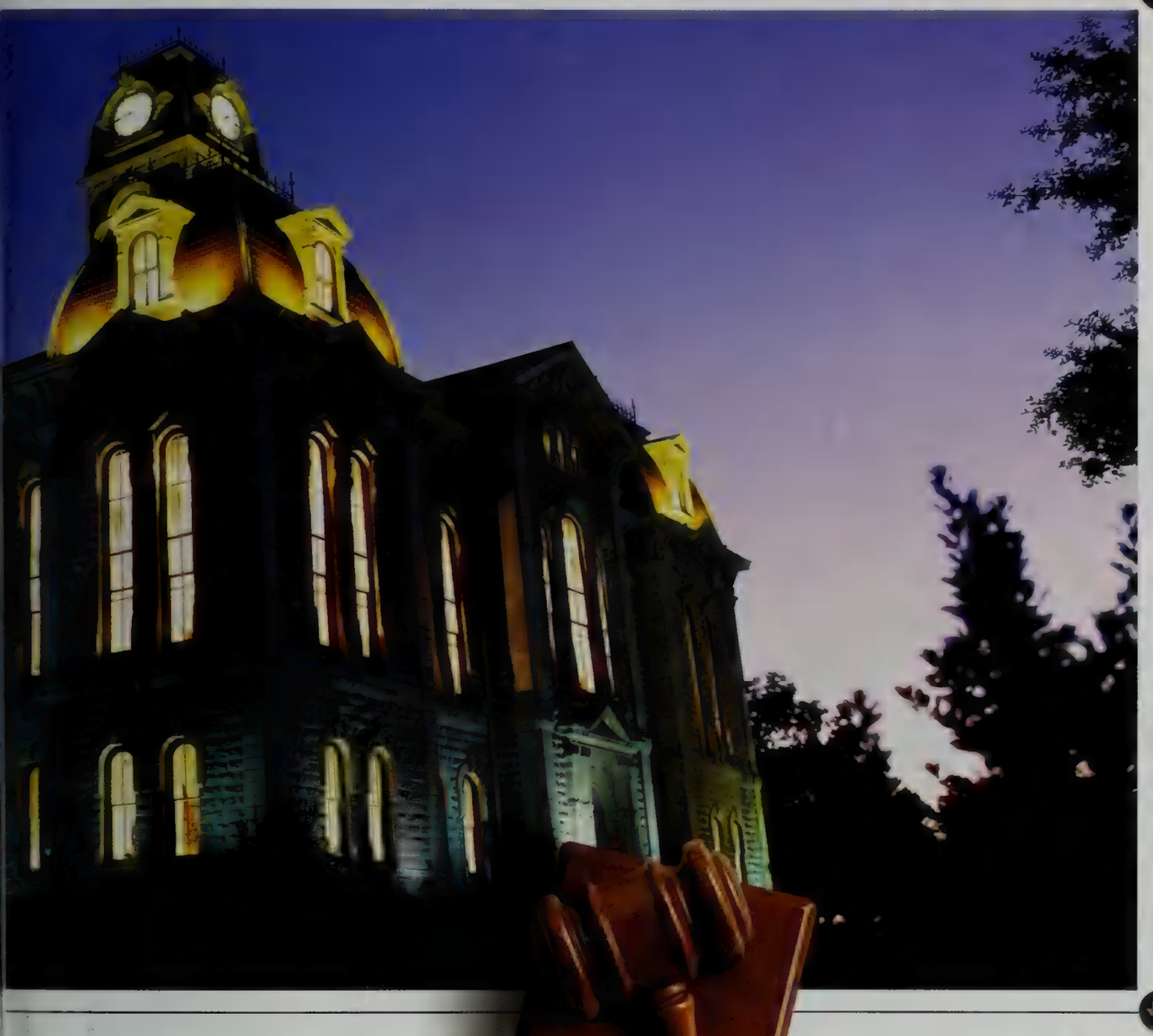
Bids were sought, but only two manufacturers felt qualified to respond. One of them, Marvin Windows & Doors, had actually been recommended by a company that was asked to bid but declined.

Though underbid by the other finalist, Marvin's figures were based on building the largest windows with structural muntin bars to withstand the winds that buffeted the building's hilltop site. Intrigued, the architect asked each company to build a sample window. One look at the prototypes and the job was immediately awarded to Marvin.

For the next several weeks, Marvin's architectural department busied itself recreating the past. Working from turn-of-the-century photographs



COMPETITION RULED IN OUR FAVOR.



of the courthouse and measurements of the actual openings, they designed the round tops, double hungs, circles and checkrail units that play such an integral role in the building's design. As for the largest of them, not only were they built to withstand the high wind requirements, Marvin delivered them factory-mulled to further simplify installation.

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CIRCLE 36 ON INQUIRY CARD

Specifying Wood Flush Doors Continued from p.125

two pages in a book. The veneer joints match and create a symmetrical pattern yielding a maximum continuum of grain. Prominent characteristics either ascend or descend across the match. Book matching is used with plain, quarter, or rift-sliced veneers. Barber pole is characteristic with book-matched faces. Because the tight and loose faces alternate in adjacent leaves, they reflect light and accept stain differently, and this may yield a noticeable color variation in some species of flitches.

- Slip matched. Adjoining leaves are slipped out in sequence, with all the same face sides exposed. The grain figure repeats, but joints won't show grain match. Slip matching is often used in quartered and rift-cut veneers, producing a uniform color as all faces have the same light refraction.
- Random matched. A random selection of the arrangement of the leaves from one or more flitches is used and produces a board-like appearance.
- End matched. Leaves are book-matched end to end, as well as side to side. This match provides a continuous grain in length as well as in width.

A door's appearance can be further enhanced significantly by the addition of molding, panels, lites, and louvers; many different configurations are offered today by manufacturers. Glass options in wood doors, in fact, have grown significantly with advances in low-E glass and warm edge technology.

Special Use Doors. Special requirements exist for doors rated for fire protection, acoustical control, X-ray resistant construction, bullet resistant construction, and electrostatic shield resistance. For example, cores for 45-, 60- and 90-minute fire doors are made of a mineral substance with a chalklike consistency.

Designed to conform to sound insulating ratings, sound retardant doors have two barrier faces separated by an unfilled air space or are filled with a damping compound that prevents the faces from vibrating in unison. Such doors are furnished with special stops, gaskets, and automatic threshold devices.

Lead-lined doors have a continuous lead sheet from edge to edge in the center of the core or between the crossband and the core. The thickness of the lead should be specified so that it meets the required shielding qualities. Electrostatic shield doors have a wire mesh in the center of the core, or between the crossband and the core, and are grounded by braided wire pigtails woven through the hinges to the frame.

Specifying WOOD STILE AND RAIL DOORS

Unlike the flat surface of wood flush doors, stile and rail doors are characterized by vertical stiles and horizontal rails as decorative elements on the door surfaces. A wide variety of standard manufactured stile and rail door configurations are available, including interior panel doors, entrance doors and sidelights, French doors, combination doors, bifold doors, louver doors, and screen doors.

Panels on wood stile and rail doors may be raised or flat and may be of solid wood, full-length edge-glued pieces, laminated parts or other wood-base construction materials that perform similarly. Molding may be raised or flush, and may be fastened with compatible nails, brads, or staples.

Recently, door panel technology has changed. Panels are now split down the middle, rotated 180 degrees and laminated together to increase resistance to warping and splitting; if a spilt does occur on one side of the panel, it shouldn't telescope to the other. Some manufacturers no longer glue door panels in place, but "float" the panels in groove in the stile sand rails to permit fluctuation without affecting overall dimensions.

Exterior stile and rail doors usually consist of laminated cores with veneers. Typically, panels are also laminated but may be solid. Be sure that stiles and rails are large enough to maintain the integrity of the corner joints. NWWDA's Industry Standard 6-91 requires exterior door stiles and rails to be at least 15 mm (4 1/2 inch) wide, with lock rails at least 190 mm (7 1/2 inch) wide for primary entrance doors and the bottom rail at least 200 mm (8 inch) wide. The American Disabilities Act requires a 400 mm (16 inch) wide bottom rail.

Nearly every element of the traditional stile-and-rail door has undergone dramatic changes in the last several years. The stiles are generally wider, which doesn't change a door's appearance, but allows a greater variety of hardware. Instead of single-piece construction, stiles now consist of short sections bonded together and covered with veneer. Connections are made by finger-jointing, which virtually doubles the gluing surface and yields an extremely strong bond. This decreases chances of warping and twisting.

Wood Stile and Rail Doors Specification Checklist

NWWDA offers the following concise checklist for wood stile and rail doors. Each requirement corresponds to a specific segment of the NWWDA Industry Standard I.S. 6. Some particulars are described here, while others can be found in greater detail in that document.

1. Indicate sizes and configurations.
2. Select and specify shop finishes, if any.
3. Select grade (Premium or Standard).
4. Select and specify safety glazing, screening.
5. Specify any special requirements, such as limitation of panel materials to wood only, special sticking profiles, wood species and cut.
6. Specify requirements for frames.
7. Specify that manufacturer certify that doors comply with NWWDA I.S.6, if desired.
8. Specify forced entry resistance for exterior entrance assemblies if desired.
9. Specify desired warranties.
10. Specify field operations: environmental controls, storing, handling, finishing, installation.
11. Note requirements for maintenance instructions to owner.

A special note on the field finishing of wood doors. It's important to note that wood doors must be properly sanded, sealed and finished on both faces and all four edges. This will reduce moisture penetration and prevent sticking and warping. This is particularly important when doors are site fitted.

Generally, wood finishing at the factory is more desirable than on the job site. The process is usually less expensive and finishes can be applied with more consistency. A factory-finished door can arrive at the site much later in the construction schedule, after the rough trades are finished and the conditions are cleaner, drier, and more conducive to a satisfactory installation.

SPECIFYING WOOD WINDOWS AND DOORS: FROM INSIDE OUT

Continued on p.130

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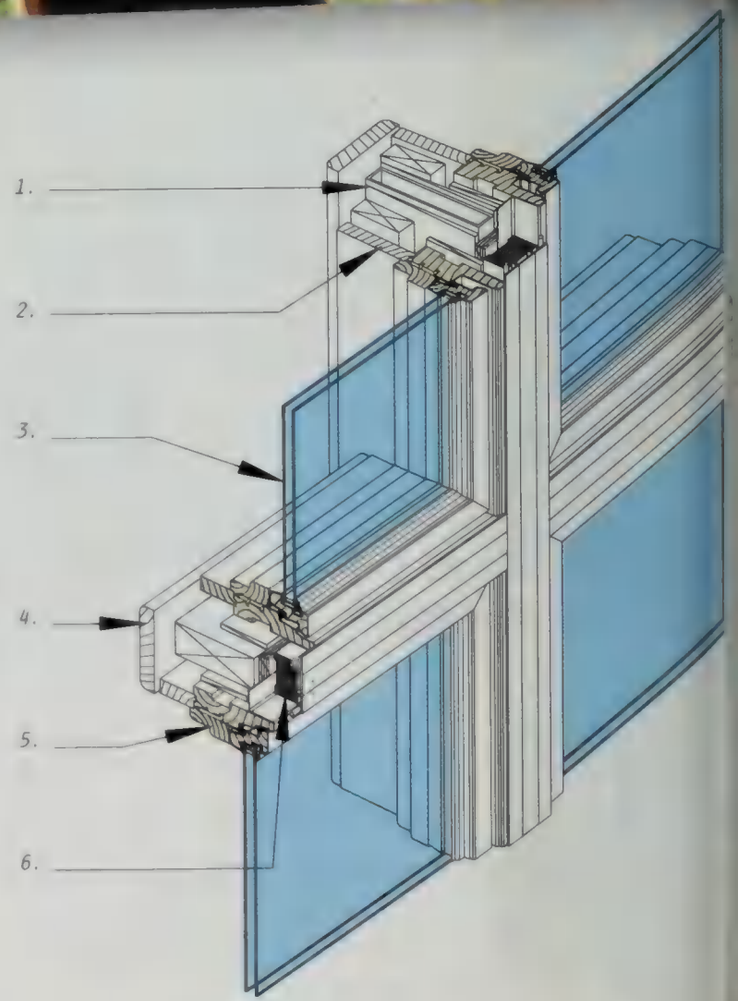
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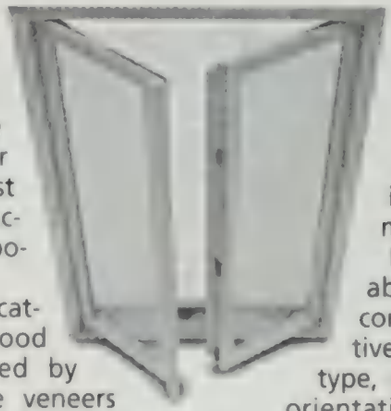
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CIRCLE 38 ON INQUIRY CARD

The development of low-E glass coatings, warm-edge spacers, and low-conductivity gas filled insulating glass units has drastically changed the window market, allowing for energy efficient windows with greater glazed surfaces. At the same time, there have been dramatic changes in window frame and sash materials, although solid sawn wood, the first material used for window frames and sash, is still the most commonly used material in the residential market. Yet, new materials are redefining the way windows are made.

For instance, many manufacturers use finger jointed stock for components of window frame and sash construction that are hidden from view. Finger joining permits the use of smaller pieces of wood that have been discarded or burned in the past and produces a structurally strong component.



A more sophisticated engineered wood product is produced by laminating multiple veneers with phenol-formaldehyde resins into large billets, which are then milled to size. The result is a structurally strong material used in door stiles and other large span or heavy load applications and hidden from view. Another type is produced by shaving aspen and poplar into strands about 200 mm (8 inch) long, laminating them together into large billets, and cutting them to required dimensions. MDI resin is used for the material, which, again, is used in applications hidden from view, in this case core frame and jamb material for clad casement and double-hung windows. In like fashion, wood-plastic composites combine wood fibers and various types of resin or plastic into composites.

Design Implications. What this list doesn't contain, and what NWWDA places great emphasis on, is "choosing a window" to meet requirements of the specific building type and site location. NWWDA's Industry Standard I.S. 2 suggests: "There is no 'perfect' window that can satisfy every situation. Too many factors such as building type and site location influence window selection. Window style and price are the easiest points of comparison. However, from consumer and builder, to specifier or architect, you should realize that the most important factors are performance related."

NWWDA's rating system (see above), therefore, takes into consideration a project's distinctive design requirements, building type, geographic location, building orientation, and building users to establish a design pressure. It then rates this design pressure as to operating forces, air infiltration, water penetration, structural strength, and force entry resistance. The purpose of the ratings is to provide minimum or maximum levels of performance windows must meet when tested according to the specified ASTM test method.

Continued on p.132

NWWDA Window Ratings

DP-Ratings	*DP15*	*DP20*	*DP25*	*DP30*	*DP35*	*DP40*
Design Pressure (psf)	15	20	25	30	35	40
Structural Test* Pressure (psf)	22.5	30	37.5	45	52.5	60
Water Penetration (psf)	2.86	3.00	3.75	4.5	5.25	6.0
Air Infiltration @1.57 psf (cfm/ft²)	0.37	0.37	0.25	0.25	0.25	0.15
Operating Force (pounds)	25	25	30	30	30	35

**Correlates with Window Grades found in ANSI/NWWDA I.S.2-87.*

Wood Windows Specification Checklist

NWWDA offers the following concise checklist for specifying windows. Each requirement corresponds to a specific aspect of the NWWDA Industry Standard I.S. 2. Some particulars are described here, while others can be found in greater detail in that document.

1. Indicate sizes, operation types, design pressure and configurations.
2. Select and specify interior and exterior finishes, coatings and claddings.
3. Select and specify glazing material. Indicate where tempered or other special glass is required.
4. If required, specify screen for each operating sash. Specify screen fabric and frame members and finish.
5. If required, specify an exterior or interior storm/energy panel for each sash. Specify glass type, and material and finish for the exterior or interior storm/energy panel frame.
6. Specify special hardware requirements, such as limit stops, electric operators, limitations on hardware materials, and operation of windows by handicapped people.
7. Specify any special requirements, such as fabrication of bay or bow window assemblies, limitations on wood species used, limitations on finger-jointing, divided light grilles, and special provisions for cleaning.
8. Select design pressure.
9. Specify a higher degree of forced entry resistance if required.
10. Specify additional testing for thermal performance and acoustics as needed.
11. Review manufacturer's warranties for glass, finish, or entire window assembly.
12. Specify field operations: environmental controls, storage, handling, finishing, and installation.
13. Note requirements for submittal of maintenance instructions to owner.

SPECIFYING WOOD WINDOWS AND DOORS: FROM INSIDE OUT



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Industry standards are developed to provide a logical, simple reference system to guide specification. Compliance with the standards on the part of the manufacturer is voluntary. However, many products are now certified as meeting a specific standard. This certification comes only after rigorous testing of the products. To be certain that products have passed any of the following tests, designers should request testing in the specification.

Door Testing. NWWDA undertakes the following test procedures:

- Fire test. A 20-minute fire test analyses different cores and core configurations.
- Smoke and draft control doors. Doors are evaluated for both in/and outswing configurations, with and without gaskets. Under the test procedures, each door is cycled open/shut five times. The closing force is measured. Background leakage rates are measured at both ambient and elevated temperatures by sealing the door to the frame with aluminum foil tape. Then air leakage measurement is made at pressure differentials at both ambient and elevated temperatures. Air leakage rates are measured for each as an indication of the smoke control performance.
- Split resistance. To find out how much pressure the stile edges of wood doors can take before splitting. A hydraulic universal testing machine is used. A split rod is inserted into a drilled hole in the door. The door is framed so it is at right angels to the pulling pressure.
- Cycle slam test. The door is inspected at every 25,000 slam cycle. Hinges are tightened and lubricated if necessary. This goes on with the cycles being counted until the limit on the number of cycles specified is reached or the door becomes inoperable, the hardware fails, or the structure of the door fails.
- Hingeloading test. To see how much resistance wood door stiles have to the horizontal withdrawal of an attached hinge. Test simulates downward force of the knob area on the leading edge of a hinged swinging door.
- Screwholding test. Determines the ability of a wood door stile to resist the withdrawal of a screw driven at right angles to the stile edge. A hydraulic testing machine is used.
- Finishes testing. Several different tests and procedures are used to determine finish acceptability, including the adhesion of finish to a wood substrate, resistance of finish to wear, resistance of finish to temperature cycling, resistance of finish to chemical reagents, resistance of finish to color fade.

Other tests include a wear test for adhesive bonds, sound tests of sound retardant or acoustical doors and resiliency of bullet proof doors.



Entry Door Systems. NWWDA I.S. 9-88 provides performance requirements for exterior wood door entry systems. Air infiltration is limited to 5.5L (0.20 ft^3) per minute per 300 mm (I ft) of crack length when tested under a uniform static air pressure different e of 75 Pa (1.57 psf) per ASTM E283. No water penetration is permitted under the ASTM E546 test with a uniform static air pressure difference of 140 Pa (2.86 psf).



Window Testing. NWWDA has established general requirements before window components can be tested. Wood components have to be kiln-dried to a moisture content of 12 percent or less at the time the window is fabricated. All wood parts, except inside stops and trim, must be water repellent preservative treated after machining. All operable windows have to be weather-stripped. When considering glazing, the manufacturer takes into account glass, glazing procedures, insulating glass, screen panels, and double glazing panels into testing consideration. In other words, components have to meet the NWWDA standard. Window hardware and adhesives also must meet ASTM standards.

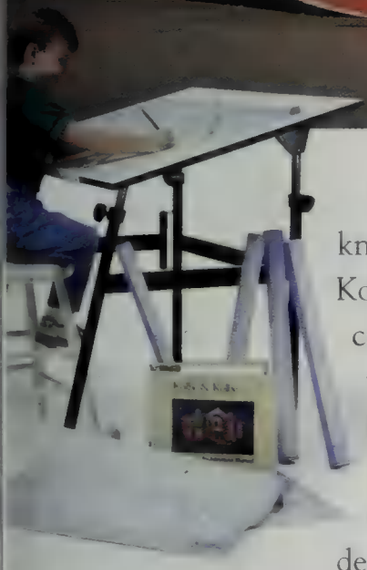
Specific window tests include:

- Structural testing. Static air pressure is applied to the exterior of the window unit. The pressure (in pounds per square feet) is rated 22.5; 30; 37.5; 45; 52.5; and 60. The pressure is applied and held for 10 seconds, then released. Then the same pressure is applied to the interior of the unit, held for 10 seconds and then released. To pass, there can't be any glass breakage, damage to the window hardware, or permanent deformation that would cause any malfunction or impair the operation of the window. Residual deflection of any member of the window can't exceed 0.4 percent of its span.
- Water penetration test. Tests how much, if any, water goes through the window during a rainstorm. The test subject mounted into wall where the window unit is closed and locked. Water applied at a rate of 8 inches of rainfall per hour. For five minutes, uniform static pressure is applied; then for one minute it is off. Sequence repeats four times. To pass the test, the window cannot leak one drop of water beyond the interior face of the window, nor can it overflow into the room or into the wall cavity.
- Air infiltration test. A test window is set into a wall structure in the testing chamber. An uniform static air pressure difference of 1.57 psf and/or 6.24 psf is applied, depending on the grade level being tested. Ratings go from 0.37 to 0.15 at a rate of 1.57 psf (cfm/ft^2). Test results are based on the

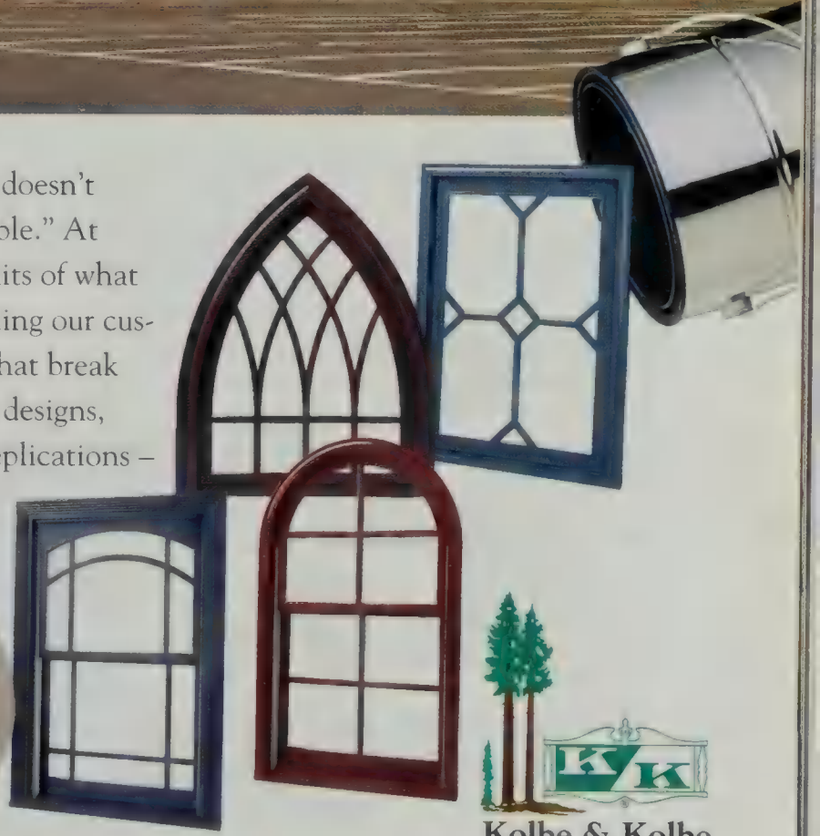
Continued on p.134

Drawing Up a New Set of Rules





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CIRCLE 40 ON INQUIRY CARD

Standards and Testing Continued from p.132

deflection of the window unit in its mounting as the static air pressure reaches its assigned levels.

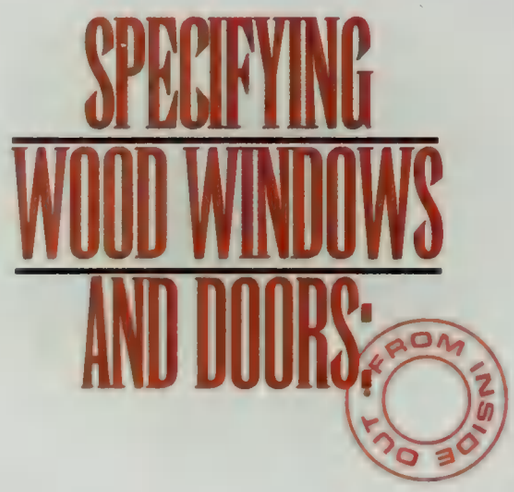
- Forced entry test. Lab technicians push and pry away with screwdrivers, pliers, and other devices to gain entry. Glazing is excluded from the procedure. The technicians can't break the glass or remove it.
- Operating force of horizontal and vertical sliding window units. Technicians inspect window handles, pulls, and other devices where pressure normally would be applied to open/close the sash. This test helps ensure that the windows will withstand the wear and tear of everyday living. The sash is unlocked, opened, closed and locked five times. Force is applied to handles, etc., parallel to and in the direction of the window openings. Allied pressure starts and keeps the sash in motion. The results are compared with a selected rating level, and the force is not to exceed the amount specified. These ratings start with an operating force of 25 pounds and go up a scale of 30 to 35 pounds.

Water-repellent preservation treatment testing. Exposure to moisture necessitates that exterior doors and window trim be treated with preservatives. NWWDA I.S. 4-81 describes the basic standards for water-repellent preservation treatment for exterior wood "millwork" to retard swelling, shrinking, and warping due to changes in moisture content and to reduce attack by decay and stain organisms.

For that standard, two testing methods have been refined:

- Decay Resistance. A new method allows testing for more than one decay fungus and requires preservative suppliers to test their formulations with other wood species, not just Ponderosa pine, which had been the only species conferred under the previous test method. Wood composites, if used in exterior applications, can now be tested according to this test method as well.
- Swellometer test. Water repellence of various preservative formulations are tested.

Continued on p.137



AIA/Architectural Record Continuing Education

Continuing Education

The preceding section *Specifying Wood Windows and Doors: From Inside Out*, provided by the National Wood Window and Door Association, is part of the AIA/ARCHITECTURAL RECORD Continuing Education Series. You can receive two continuing education credits by reading the section, studying the learning objectives and answering the questions below. Check your answers against those provided on the next page and return the self-report form as indicated.

Learning Objectives

After reading *Specifying Wood Windows and Doors: From Inside Out* and completing the following exercise, you will be able, from a design or specifications perspective, to:

- Distinguish at least five new trends in the composition of windows or doors.
- Determine five or more results from specific veneer cutting and matching methods.
- Discuss one example of door manufacturing processes with safety and welfare implications for designers.
- Identify three NWWDA standards and at least six tests for specifying doors and windows.

QUESTIONS

1. What new materials and approaches have improved the energy efficiency, strength, and aesthetics of the window market?

Answer 1. _____

2. How do the cutting and matching techniques for veneer specifically influence door appearance?

Answer 2. _____

3. What are three processes used today for preventing warping?

Answer 3. _____

4. The section provides three checklists for specifying doors and windows. Identify the NWWDA standard that corresponds to each list.

Answer 4. _____

5. What role does finishing play in ensuring dimensional integrity in wood products? Summarize three categories of finishing steps.

Answer 5. _____

6. List eleven NWWDA door tests and four window tests.

Answer 6. _____

For answers, turn to page 137.
For self-report form, turn to page 216.

Questions on page 134

ANSWERS

1. New materials and approaches include low-E glass coatings, warm-edge spacers, low conductivity gas filled panes, finger-jointed stock in frame and sash construction, engineered wood products, cladding nonwood window interiors with wood.

2. Rotary cut produces a bold grain. Plain slicing permits a natural grain progression when assembled. Quarter slicing produces a series of stripes. Half-round slicing cuts across annual growth rings and is most commonly used with red and white oak. Rift-cut produces a tight, straight grain.

Book matching creates a symmetrical pattern. Slip matching produces a uniform color. Random matching gives a board-like effect. End matching yields a continuous grain in length and width.

3. One, panels are centrally split, rotated 180 degrees, and then laminated. Two, "floating" panels in grooves in stile and rails. And, three, finger-jointing bonded stile pieces provide added stability.

4. NWWDA Industry Standard I.S.1, Wood Flush Doors; NWWDA Industry Standard I.S. 2, Wood Window Units; NWWDA Industry Standard I.S. 6, Wood Stile and Rail Doors.

5. Moisture in the environment can influence the dimensional integrity of wood products. Therefore, doors must be carefully finished, including the proper preparation of the surface, the application of non water-based coatings and the allowance of adequate drying time between coats.

6. Doors: Fire, smoke and draft control, split resistance, cycle slam, hingeloading, screwholding, finishes, air infiltration, water penetration, decay resistance, Swellometer.

Windows: Structural, water penetration, air infiltration, force entry, operating force of horizontal and vertical sliding windows.

For self-report form, turn to page 216.

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Created under the auspices of the National Wood Window & Door Association, the Hallmark Certification Program identifies wood window and door products that are manufactured in accordance with NWWDA standards. Through an on-going inspection and testing program, architects, builders, specifiers, and consumers can be assured of identifying quality products.

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- Water Repellent Preservative Treatment for Millwork . . . . .(I.S. 4)
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- Wood Swinging Patio Doors .(I.S.8).

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Or visit the NWWDA website at http://www.nwwda.org.

CIRCLE 43 ON INQUIRY CARD



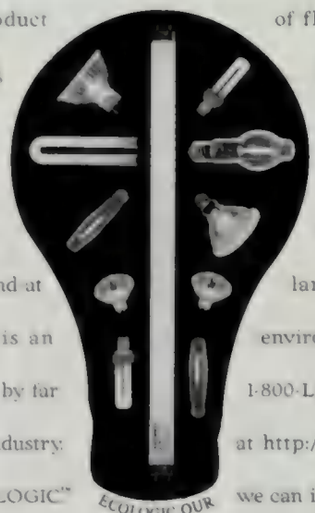
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CIRCLE 44 ON INQUIRY CARD



BIG IDEAS...

In cartoons, big ideas are always represented by a light bulb floating over a character's head inside a balloon. Generally, they are household-variety A-lamps, although in recent years I've seen them in European comics drawn as self-ballasted compact-fluorescent lamps. It has been my feeling lately that if an idea is truly great, there should be a high-intensity discharge lamp floating in the balloon. Or possibly one of the new sulfur lamps, complete with the microwave-power supply.

I say this because here at ARCHITECTURAL RECORD, editors and readers seem to bombard each other with ideas the way electrically-created ultraviolet light bombards the phosphor in a fluorescent tube to create light: that is, once the electrodes get fired up, there's no stopping it until the circuit is broken. When representatives of the magazine were interviewing readers last year while preparing to redesign and reformat the magazine, readers were of the overwhelming opinion that the RECORD LIGHTING SUPPLEMENT should be incorporated into ARCHITECTURAL RECORD, rather than continuing as a stand-alone product. Among other advantages for the reader, such as not having to scour the office for that copy of the lighting magazine that has been hoarded by the director of design in a secret ARCHITECTURAL RECORD LIGHTING cache, four times a year you can continue to rely on the magazine to provide you with articles on innovative lighting uses, noteworthy lighting projects, technical information, as well as a selection of new lighting products. As you can see here, the lighting pages will be clearly identified as a separate section. In some months, we will be able to offer AIA Continuing Education opportunities, such as the case study on office lighting on page 154, for AIA members who have a special interest in lighting. Please let us know how you like our new lighting section.

—Charles Linn, AIA

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Kugler Tillotson Associates

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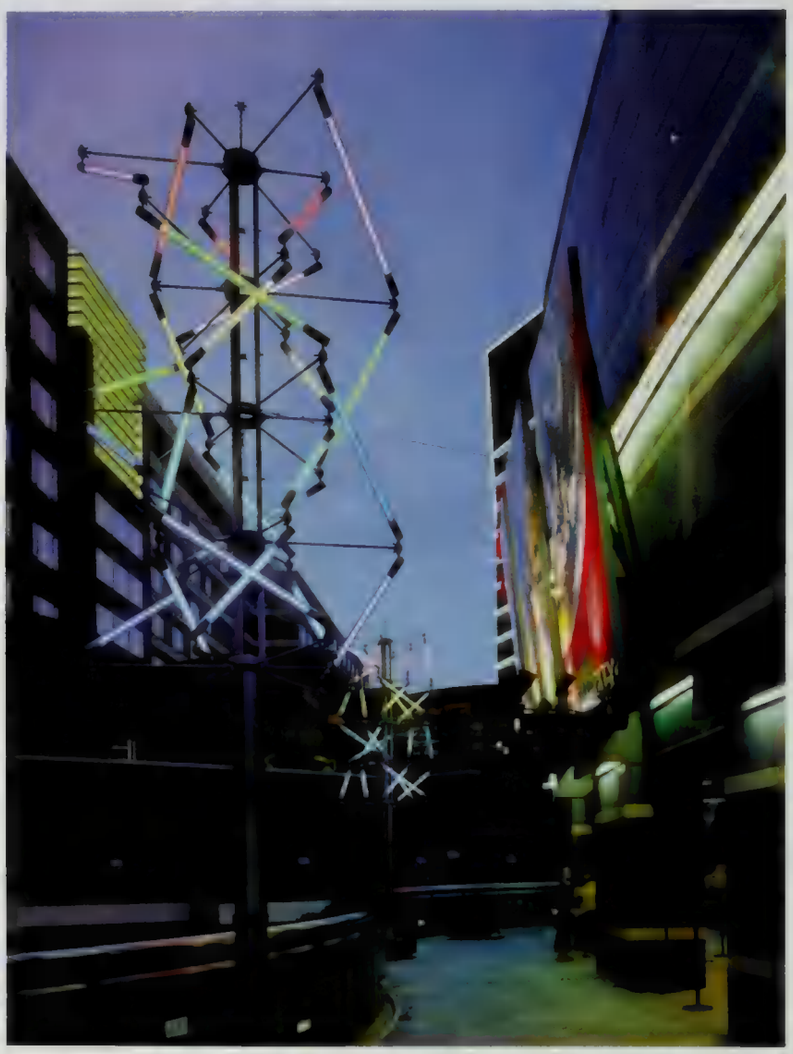
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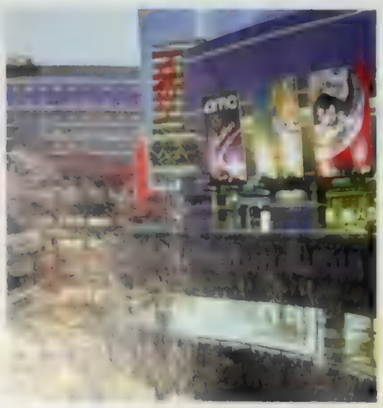
Above: Neon trees at Canal City Hakata, Fukuoka, Japan designed by Zimmerman Neon Studios, page 140.

CREATIVE USES



NEON TREES NEVER LOSE THEIR LEAVES

Zimmerman Neon Studios of Huntington Park, Calif., combined tensile structure with neon tubes and electronic controls to create these neon "trees" at Canal City Hakata, a new nine-acre tract in Fukuoka, Japan. The Jerde Partnership of Los Angeles is the architect on the project. The five twenty-foot-tall trees are built of hundreds of pieces of finely finished, precision-made aluminum, stainless steel, and glass parts. An open frame atop the power trunks supports a series of stems, nodes, cables, and neon struts that create a complex succession of helical forms. The lower portion, which is enclosed, contains the electrical system, including transformers and solid-state electronics, which allow the neon lamps to be programmed in an elaborate sequential display.



Zimmerman Neon Studio's neon trees at Canal City Hakata.

LILIES THAT SHINE BRIGHTLY

The Calla Lily, a very successful commercial and residential-scale lamp manufactured by New York City architect David Bergman's firm, Fire and Water Lighting, is made of folded copper mesh and tubing. The copper mesh picks up the light for a stunning glow that must've caught the eye of someone at Ehrenkrantz & Ekstut Architects. The design (with Bergman's blessing) has recently made an appearance in Jack-and-the-Beanstalk size at the firm's new Circle Centre Mall in Indianapolis. The design is comprised of 48 vine-like fixtures, mounted on eight 50-ft-tall columns. If these look a little large for your place, Bergman's smaller versions come in floor lamp, sconce, or table lamp styles.





FOR FISH: A LIGHT DIET OF METAL HALIDE

A new 300,000-gallon aquarium, recently added to the Virginia Science Museum, is illuminated from above by 250W metal-halide lamps. The light produced by these special lamps gives visitors the impression they are viewing the terrain of the Norfolk Canyon, an undersea trench located off the continental shelf of Virginia, under daylight. The aquarium was designed by E. Verner Johnson, AIA, and Associates, of Boston, Mass. Metal-halide lamps with a 5K color temperature and 75 color-rendering index are a favorite source for aquarium designers because their sun-like spectral distribution allows animal and plant life to thrive.

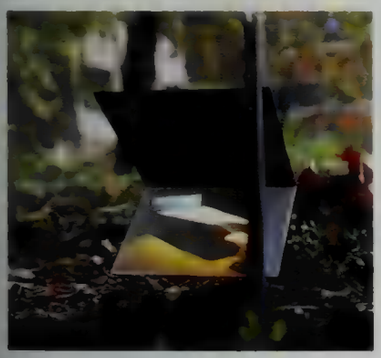
Sharks and other sea-life have adapted well to the metal-halide lighting in the new aquarium at the Virginia Science Museum.

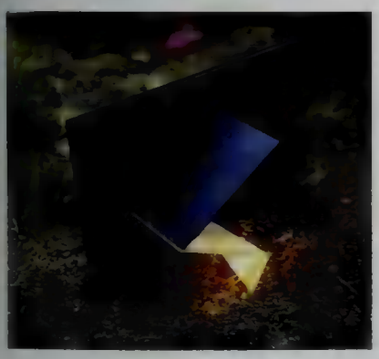




SHADOWS AND LIGHT

Seattle lighting designer Iole Alessandrini has pursued a lighting project with a goal that is the opposite of what most lighting designers attempt to accomplish. She has succeeded at balancing brightnesses outdoors, and during the daylight hours at that. Her project was an exhibition of video-art pieces produced by video artists Gary Hill and Marianna Haniger. These were displayed along the half-mile Wolf Tree Nature Trail in Discovery Park in Seattle last summer. Normally there is too much ambient light for video projections to be seen during the day. Alessandrini designed various devices consisting of a Lexan screen, which has reflection properties, and a plate made of a black matte material, which when placed to oppose the direct sunlight, casts its shadow on the screen. This allows the video images to be visible even when the surrounding light is as bright as several thousand fc. Some of the devices were ground-mounted, and others were hung from trees. Images are projected onto these devices by video projectors set in vandal-and-waterproof containers, anchored to the ground and wired to the park's existing electrical lines.





Allesandrini's devices allowed video projections to be viewed in full daylight in a Seattle park last summer.



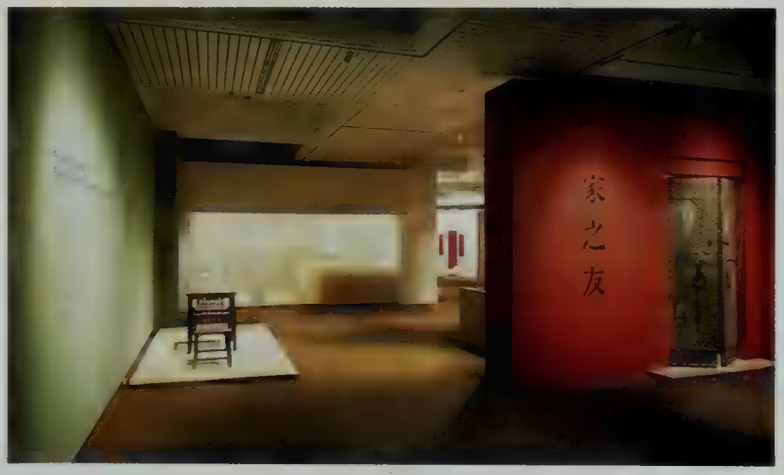
ILLUSIONS OF THE THEATER BROUGHT TO MUSEUM EXHIBIT

A Chinese furniture exhibit designed by architect Kyu Sung Woo, AIA, of Cambridge, Mass., and illuminated by Berg Howland Associates of Boston, was displayed this past summer at the Peabody Essex Museum, in Salem, Mass. Woo designed rooms in sizes that would be appropriate to the scale of the furniture in use, and arranged them along a "street of rooms." The idea, says lighting designer Jeff Berg, AIA, "was to create a series of abstract settings for the furniture, to get a sense of their context and scale, and to screen out the museum itself." To that end, Woo created a progression of surfaces, some of which were made of semi-transparent scrim. The lighting designers worked with the transparency of the material, sometimes lighting it from the viewing side in order to make it opaque. When the scrim was used as a ceiling, fill light was created for the exhibit by bouncing light off it from above, and accent lighting for objects was added over that. "In other cases," says Berg, "we let it be transparent; it was lit from both sides so that you could see through it and get a sense of what was coming in the rest of the exhibit. Track lighting was used throughout the exhibit, although quartz uplights were added in the vaults of the main room. MR16s were used for accent lighting, and quartz floods used for lighting the scrims.

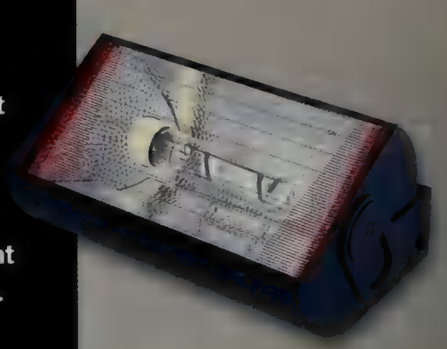
Berg says of working with Woo, "He's very careful and has a very clear idea of what he wants to do. I think it's very interesting to have an architect do exhibit design. You get a more integrated and coherent idea, than you get from an exhibit designer. There's more emphasis on a theme and on the overall idea."

Halogen "wedge" uplights are used to uplight the vaults in the main exhibit room (top photo, below). Light through scrims (bottom photo) give a sense of what is to come.





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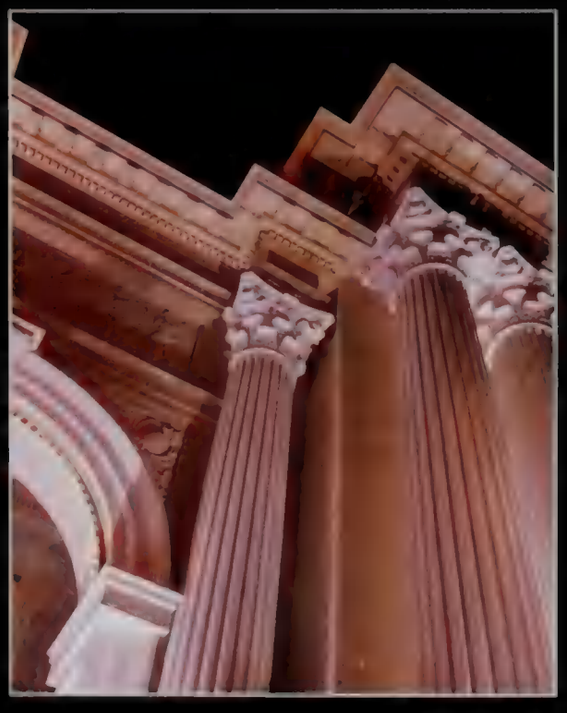
CIRCLE 46 ON INQUIRY CARD

The Hydrel 9000 Series established a new benchmark for in-grade lighting in the early nineties.



Today's 9000 Series is still the

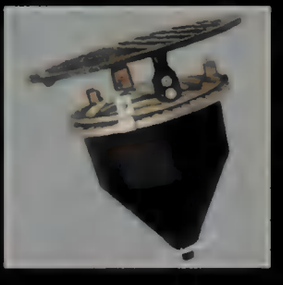
BENCHMARK



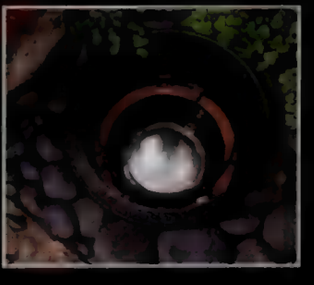
These innovative fixtures introduced new levels of lighting performance; sealed modular construction to eliminate moisture intrusion and resulting corrosion; and greatly simplified installation and maintenance.

Today's 9000 line has expanded to handle new lamps and a variety of modifications to accommodate designer's needs.

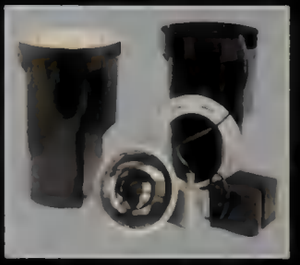
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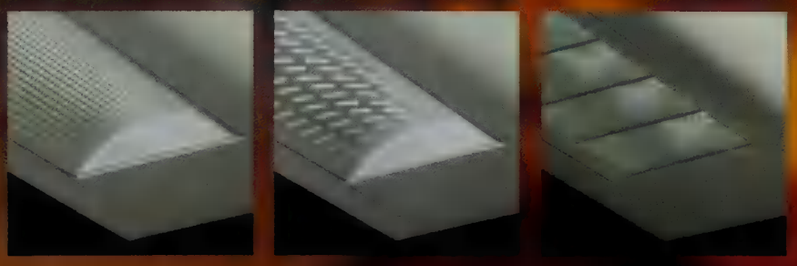
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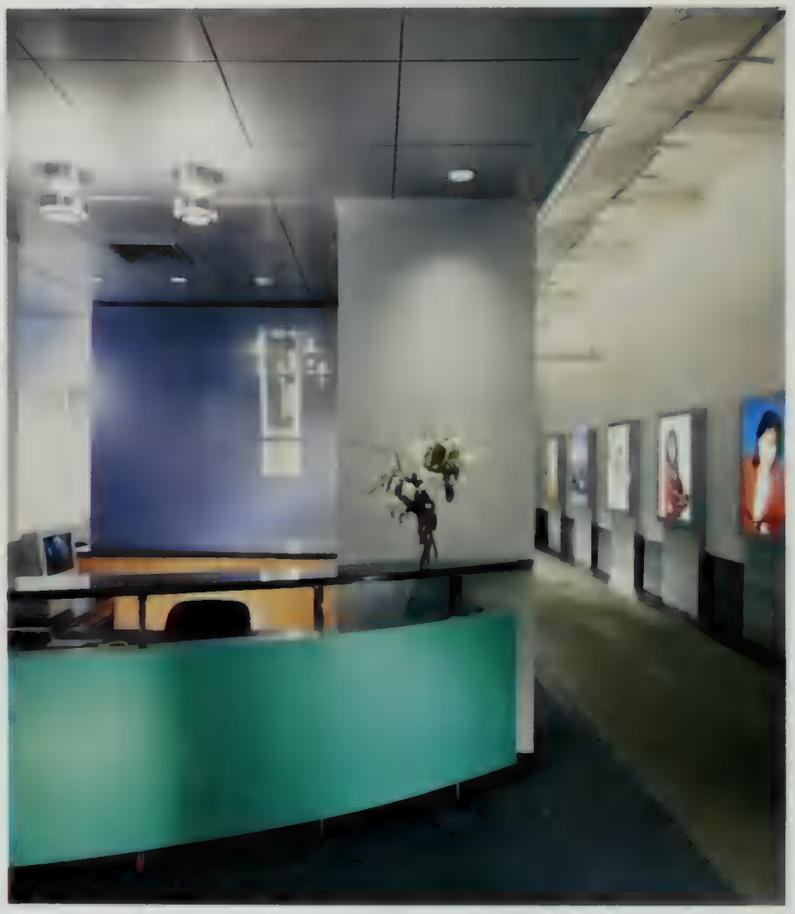
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CIRCLE 48 ON INQUIRY CARD

E! Entertainment Television: Star-Quality Lighting, and No Hype

by Charles D. Linn, AIA



It is a problem that almost every architect faces on almost every project: how to come up with a lighting solution that is inexpensive, energy efficient, uses off-the-shelf components, can be completed at lightning speed, and will turn out to be somewhat glamorous. Architect Steve Kilcoyne's take on this lighting challenge creates a bit of the glitter that befits the offices of E! Entertainment Television, the network that brings the likes of Howard Stern and Joan Rivers to the airwaves. But one wouldn't necessarily know from looking that the job was done on the quick and the cheap.

Kilcoyne, a partner in the firm of Allen + Kilcoyne Architects had one bit of good luck starting out. E!'s space had extraordinarily high ceilings compared to the other floors in the 1930s office building. "This is a transfer floor, with setbacks overhead and deep beams," he says, "so when they built it, they decided to make this floor higher to get the [illegible] they wanted. The other floors in the building are very squat [illegible]."

Recognizing an opportunity when he saw one, Kilcoyne couldn't let all that space go to waste. "I didn't want to do a typical dropped acoustical-tile ceiling, with troffers and downlights," he says. "That was one problem. The second problem was dealing with this long hallway one walks down to get to the office areas. We made it into a gallery."

To emphasize the height of the space, and define it through light, Kilcoyne used a metal-grid system manufactured in a quarter-round configuration, and backed by shiny metal screening, one of a number of surfaces available from the manufacturer. This is run continuously along the length of the gallery, and light from wall-mounted fluorescent uplights grazes the screen. Most of the light bounces off the exposed, white-painted concrete ceiling and back through the screen.

Kilcoyne notes, "This project was constructed in something like eight weeks, so there was no time for any fooling around with something custom." The grid solution is also a nice alternative to the track lighting often seen in hallway galleries, although its lower light levels are aided by the fact that the graphics are mounted on lightboxes, and don't need much illumination compared to regular pictures.

The lighting in the open-office space is similar to the lighting in the gallery, in that it uses indirect lighting as well as the curved metal grid and screen system. However, here the metal screen is bowed upward in a shallow arc and illuminated from below by pendant-mounted fluorescent uplights, and separate sections of the grid-mounted screen are centered in each column bay.

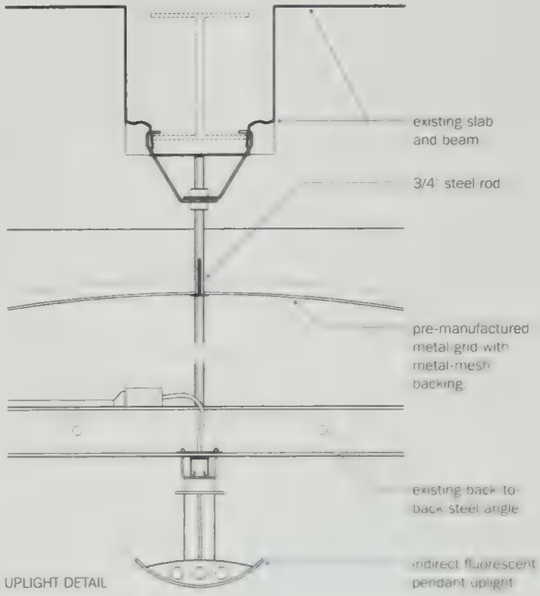
"In the open-office space, I didn't want to have any downlights. I wanted to have fluorescent task lights on the desks, and then illuminate the ceiling and wall surfaces," Kilcoyne says. On one side of the room, the upper wall surfaces are uplit by fluorescent strips concealed in a trough, and on the other side, wall-mounted fluorescent uplights are used. A fluorescent sconce accents each of the columns. While perforated metal is sometimes seen in these applications because it is more efficient at reflecting the indirect light, Kilcoyne liked the transparent effect of the screen material better. Perforated metal also would have created visible dark shadows behind each curved panel.

Windows in the private offices face south and are brightly daylit, so it was a natural to make the inner office partitions of translucent fiberglass insulating panels. These transmit daylight to the open-office space without compromising privacy. Fluorescent cove lighting is provided over the entry door to each office.

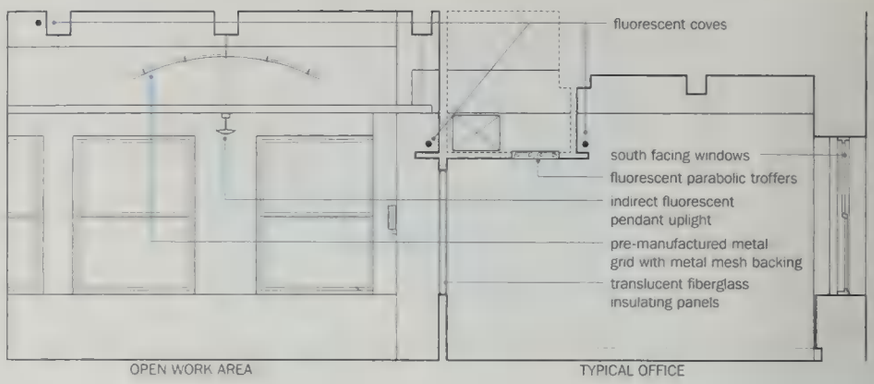
Project: *E! Entertainment Television, New York City*
Architect: *Allen + Kilcoyne Architects—Steven Kilcoyne, partner-in-charge of design; Daniel Allen, partner-in-charge; Richard Killeen, Yetsuh Frank, Evan Molho, designers*
Lighting consultant: *R.L. Design—Richard Eisenberg*
Electrical engineer: *Ambrosino De Pinto & Schmeider Engineers*



The gallery at E! is illuminated by a series of evenly-spaced, wall-mounted fluorescent uplights. Light bounces off and through curved metal screen material to give the space soft, indirect light. Light from the conference room spills through fiberglass insulating panels at left. Portraits of E! entertainers at the lower right are mounted on lightboxes.



UPLIGHT DETAIL



OPEN WORK AREA

TYPICAL OFFICE







The curved metal screen has been repeated as an arch in the open-office areas (right) and is also referred to in the conference room pendants (below). Private offices (above) have fiberglass insulating panels in their interior walls, allowing the open-office areas a bit of borrowed light.



The conference room lighting is relatively simple: A fluorescent cove is concealed behind the edge of a dropped ceiling over the conference table; track is used to light art work on the walls, and recessed PAR20 wallwashers are used to graze the narrower endwalls, including a wall of fiberglass insulating panels that backs up to the gallery. Additional PAR downlights are recessed into the dropped ceiling over the conference table, along with three pendants. The pendants are fitted with halogen lampholders, in a horizontal position, that are aimed upward so the light bounces off a curved reflector. These decorative fixtures echo the lighting concept in the open office area so well one might almost assume they were the inspiration for the rest of the job. Simple wall-mounted sliders are used for control.

"It was a low-budget job, just slightly above 'work letter,'" he says, invoking the New Yorker's term for the amount of money a landlord agrees to pay to finish out a tenant's space. "We had to be really careful with what we did. We started in January of this year, handed in the drawings two months later and the clients were in in eight weeks." ■

Manufacturers' Sources

Pendant- and wall-mounted indirect uplights: *Neo-Ray Lighting*

Recessed fluorescent downlights: *Lightolier Inc.*

Concealed fluorescent striplights with fluorescent reflectors: *Mercury*

Decorative downlights and fluorescent wall sconces: *Shaper Lighting*

Recessed Track: *Lightolier, Inc.*

Conference room pendants: *Winona Lighting*

Conference room controls: *Lutron Electronics Corp.*

Curved grid with metal screen: *USG Interiors*

Curvatura Fiberglass insulating panels: *Kalwall Corp.*

Steelcase Worklife Gets an Entirely New Kind of Lighting.

by Charles D. Linn, AIA

Change is the constant at Steelcase Worklife, the furniture and office systems manufacturer's New York City customer resource center and sales offices. "When Steelcase came to us they were looking for some conceptual ideas," says lighting designer Jerry Kugler. "And the one thing of which they were sure about the spaces was that they would always change. We had to design something that would work on any of the floors that they had." Kugler thought of the building as "a kind of sandwich. We knew the bread. We knew that the lobby would be different, and we knew that the top would be different. And we knew that all of the stuff in the middle would have to be very flexible."

Conceptualizing a lighting system

Kugler and his associate, Charles Starner, began conceptualizing about not only how to accommodate a number of lighting functions but also how to devise a system that would help spatially organize a building that had been built at two different times. Varying column grids and ceiling heights were among the conditions they encountered. "The question was," says Kugler, "could we, that is the architects and the lighting designers, collectively try for one grid that would pass through all this? And, we worked toward a module that would repeat."

What Kugler and Starner developed was a grid of points that were superimposed over the building's irregular column plan. From the ceiling, these points were used to support a series of parallel continuous extrusions that carry power, and are also capable of carrying some loads. "Our original idea was that this extrusion would run through continuously in rows, and it would be used to unify the space, be an organizer of the space, because so much was going on below it," says Starner.

"You can erect offices around this 'grid,'" says Kugle. "You can erect furniture conditions, you can build wall conditions, and it can be stacked through the whole building. The architects loved it. They said 'This is just what we're looking for. The grid is simple enough, and repetitive enough that it will really help us get to where we want to be.' In the end what they're doing is selling furniture, and they need to be able to make the space very kinetic and transient."

Refining the system, and letting go

At this point Kugler and Starner began developing pieces that could be attached to the extrusion. "They [Steelcase] said, 'we want there to be theater spotlights to highlight our product; we want to be able to do indirect lighting because many offices use a lot of computers, and we want to be able to create a sense of place in the space.'" The designers took [illegible] step further, and explored having the extrusion [illegible] a way that fabric could be stretched between some [illegible] extrusions to create temporary ceiling planes, some of



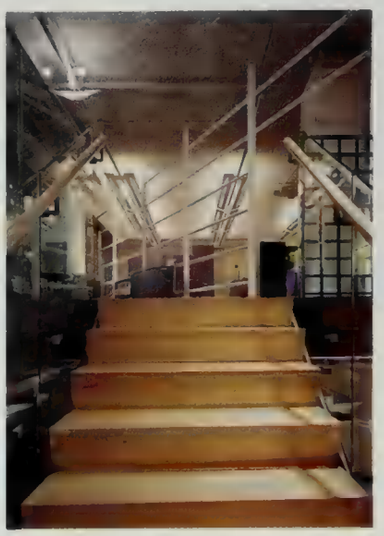
which could be indirectly lit from behind and would glow.

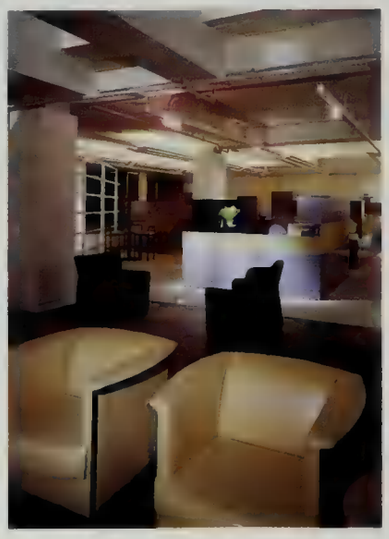
"And," Kugler laments, "we put this whole package together. We got as far as finding generic optics for it, standard track, and made it so any manufacturer could bid it, and got a price for it, and it was way too expensive. It was three times more expensive than anyone wanted to pay. So then the consensus was, let's just not think about it." But somehow the idea wasn't dead. "It took a year to come back around, and there were an awful lot of players. We worked more in an advisory capacity in the end. As it turned out, the extruded track took a different shape; the wing-shaped plates on the ends were designed by the architect; another piece as it evolved came from other fixtures that had been designed by other manufacturers that we had been involved with; the client was involved as well; and now they all came out of one hand—they were melded together and came out of Peerless Lighting. For better or worse, it's a complicated process, but lighting-wise it achieves exactly what was intended originally."

The resulting lighting system is based on a 20-ft module. Between the end-points of the module, a single piece of extruded, line-voltage track is suspended and fed electrically from one end. When indirect fluorescent uplighting is installed, access to the track is not blocked, making it possible to create an indirect lighting environment for office

Project: *Steelcase Worklife, New York City*
Owner: *Steelcase, Inc.*
Architect: *Kohn Pedersen Fox Interior Architects—J. Woodson Rainey, Jr., AIA, design principal*
Lighting Designer: *Kugler Tillotson Associates—Jerry Kugler, president; Charles Starner, associate*
Electrical engineers: *Cosentini Associates*
Construction manager: *Tishman Interiors*


EXIT





The various possibilities provided by this new lighting system can be seen on the previous pages, where there are close-ups of the indirect fluorescent uplighting system and the low-voltage exposed-conductor system. Track can be used alone to highlight furniture on display (opposite) or with the low-voltage exposed conductor system below. Many fixtures are compatible with the exposed-conductor system, allowing the look of the showroom to change regularly.



systems below, while still allowing track fixtures to be used to spotlight products. The indirect uplights can be removed simply by loosening set-screws that secure them to the track, and track fixtures are removed with a twist. This lighting system offers an enormous range of possibilities for those doing product display, as well as offering comfortable lighting for those who are actually working at desks and computers in the space. "A showroom calls out for total flexibility," comments Starner. "It has to, because they're rearranging things there every day."

Some sections of the extruded track have no indirect lighting installed, but wing-shaped end-caps with bare-conductor wires stretched between them. These accommodate low-voltage decorative fixtures that simply clip the bare wires. "What's nice about this is that there are 50 or 60 products on the market that will fit on these wires. Next year they could choose something totally different," says Kugler. For now, the client chose hollow blown-glass spheres with low-voltage lamps for this application. As a visual pun on this spherical theme, in the lounge Kugler and Starner used low-voltage lamps suspended on long stems that have been covered by stainless-steel tea balls, bought by the case in Chinatown.

The most significant addition to the lobby was the installation of a "box" of stainless-steel mesh, and a large ant colony. The light box is intended, according to Kugler, "to be a carpet of light to draw you in. This isn't the first time we've worked with this architect, to try to get moire patterns in wire mesh to work. We were trying to do a folded plate scenario, but we didn't like it when we got it there. So, basically, what you have is this hollow banded box of stainless-steel mesh, open on the top.



In the lobby, a wire-mesh box was installed over rows of down-lights, to create what lighting designer Jerry Kugler calls "a carpet of light" to draw customers in.

All we have to make this happen is a series of recessed downlights, so that the light is both reflecting around the box and through it." As well as bringing some life to the lobby, it effectively ties this entry space to the sparkle of the upper floors. ■

Manufacturers' Sources

Custom fluorescent uplighting and support rail system: *Peerless Lighting Corp.*

Low-voltage cable lighting: *Tech Lighting; Translite*

Undercabinet tasklighting: *Peerless*

Track and heads: *Halo Lighting*

Low and line voltage downlights; baffled compact fluorescent downlights: *Edison Price*

Lensed fluorescent downlights: *Lightolier*

Linear fluorescent wall slots: *Peerless Lighting; Edison Price; Neo-Ray*

Fluorescent troffers: *Zumtobel*

Custom tea-ball fixtures: *Rambusch Lighting*

Prudential Healthcare: An Office Lighting Case Study

by Paula Rodgers and Naomi Miller

The Lighting Research Center at Rensselaer Polytechnic Institute, Troy, N.Y., has conducted a series of lighting case studies called Demonstration and Evaluation of Lighting Technologies and Applications (DELTA). record lighting is pleased to present part of one the center's recent studies, a new office building for Prudential HealthCare, in Albany, N.Y. The complete report includes plans, specifications and all user-response data.

Employees in this 84,000-sq-ft building process medical and dental claims for their New York state clients. The Building includes open-office space with partitioned workstations, conference rooms, a central mailroom, and an employee cafeteria. Gary Steffy Lighting design was hired to devise a cost-effective lighting scheme that optimizes energy savings, while providing balanced brightnesses. Brightnesses are balanced in the office environment to reduce the brightness of images on a VDT screen and to improve the workers' visual comfort.

Employees typically process mail, do data entry, and answer customer telephone calls. Linear fluorescent uplighting in open offices provides low-level ambient light for reading, yet minimizes glare on employee's VDTs. Individual fluorescent task lights boost desktop light levels for more difficult reading tasks. The lighted environment complies with the standards for office lighting set by the Illuminating Engineering Society of North America, known as RP-1.

Project specifications

The building's principal light sources are F32T8 4-ft rapid-start lamps, with a CRI of 75 and a correlated color temperature (CCT) of 3000K. These lamps are used in suspended uplights, concealed wall slots, and recessed troffers. Task lights use F25T8 or F32T8 lamps with a CCT of 3500K. Most recessed downlights and wallwashers use compact-fluorescent lamps, either FT18W 3000K, 85CRI or CFT13W 2700K, 82 CRI. A small number of incandescent downlights used 50W PAR20 halogen lamps.

All the T8 lamps and most compact-fluorescent lamps are operated by electronic ballasts. Task-light ballasts are electronic, designed for reduced light output with a ballast factor of 0.77.

Details

Typical open offices. Lighting in open office spaces is provided primarily by rows of pendant-mounted uplights, in oval, 3 in.- by 8 in.-extruded aluminum housings in continuous rows. These are suspended from the 8-ft, 9-in.-high ceiling with aircraft cable. The scheme provides an average workplane illumination of 28fc. Task lights, which are mounted under the furniture systems' overhead cabinets, are furnished with a lensed optical system designed to provide uniform illumination across the work surface, and minimize lamp imaging. These utilize one F25T8 lamp, whose light output is reduced through the use of a special ballast. The task lights boost the workplane illuminance to an average of 36 fc. The widespread distribution of the fixtures allows the indirect fixtures to be spaced 8ft on-center, while still giving a 4-to-1 uniformity ratio, which meets the RP-1 standard. The round profile of the fixtures allows shadows on the bottom of the fixtures to vary gradually, preventing sharp-edge luminaire reflections in the VDT screens. A time clock on each of the three floors switches them on for the early morning shift, and off after the late shift and cleaning are complete.

Typical Workstations. The layout and lighting of workstations in the open-plan areas on the second and third floors of the building are essentially the same as those on the garden level, except that the furniture

Continuing Education *This article examines a lighting case study provided by the Lighting Research Center at Rensselaer Polytechnic Institute, Troy, N.Y. Use the following learning objectives to focus your study. After reading this article, look for the questions and self-report form in the March issue of* ARCHITECTURAL RECORD. *After completing the questions and checking the answers, AIA members can send in the self-report form for two AIA Learning Units.—Mark Sexton, AIA, Director, Professional Development Products and Services.*

Learning Objectives *After reading this story and completing the exercises, you will be able to:*

- *describe the approach to lighting typical office workstations;*
- *identify lamp imaging and luminaire VDT-reflection problems;*
- *comment on the effectiveness of the lighting design.*

Project: *Prudential HealthCare Albany, New York*
Architect: *The Clover Group*
Lighting Designer: *Gary Steffy Lighting Design—Gary Steffy, president; Gary Woodall, senior designer and project manager*
Site sponsor: *New York State Energy Research and Development Authority*
Evaluation: *Lighting Research Center DELTA Team—Naomi Miller, program director; Russell Leslie, Mark Rea, reviewers; Paula Rodgers, project coordinator; Peter Boyce, evaluation team leader; Judith Block, publication manager; Claudia Hunter, editor; Naomi Miller, Linda Sanford, Maarten Mulder, Rita Koltai, evaluation team; James Underwood, Abhay Wadwa, André Yew, technical assistance*
DELTA Members: *Bonneville Power Administration; Consolidated Edison of New York; New York State Energy Research and Development Authority; Northeast Utilities System; Rochester Gas and Electric Corporation; Lighting Research Center*

DELTA has evaluated a number of lighting environments including retail, office, and light-manufacturing facilities. For more information about DELTA publications and ordering information, contact the Lighting Research Center, Rensselaer Polytechnic Institute, Troy, New York 12180-3590. Phone 518/276-8716, fax 518/276-2999, or e-mail lrc@rpi.edu.



Typical workstations (left) have light to medium finishes and are illuminated by rows of pendant-mounted fluorescent uplights, as well as fluorescent task lights that are mounted below binder bins. The Cornerstone Room (below) is a multipurpose conference room for meetings and audio-visual presentations to clients. Here the lighting is a combination of T8 uplights, wall slots, and recessed PAR20 incandescent floodlamps. The downlights are used alone during video presentations when other room lighting would interfere with note-taking.

finishes on the upper two floors vary between 30 and 50 percent reflectance, rather than a darker range of between 10 and 30 percent on the garden floor. It is worth noting that workers perceive that there is less light in the workstations with the darker finishes.

Task lights are mounted on the undersides of the binder bins. These have a contoured prismatic lens that projects light toward the rear panel of the workstation, as well as down toward the task area. This optical system spreads the lamp image evenly across the lens area, reducing brightness and eliminating any veiling reflections. The balanced luminances between the task and the immediate surroundings meet the RP-1 recommended ratio of 3 to 1. All employees have a VDT in the corner of their workstations, and may have a view to the outdoors through perimeter windows. VDT users immediately next to windows may experience glare on their screens.

Managers' Conference Rooms. All managers have conference rooms adjacent to their workstations. Three walls are light gray in color, with 50-percent reflectance, and the fourth has partially-frosted glass panels. Two 8-ft-long uplights provide an average of 55 fc on the conference table, and contribute useful vertical illumination for wall-mounted marker-boards. The uplights are controlled by a wall-switch occupancy sensor just beyond the door swing inside the room. The DELTA evaluation team found that these lights were in use only 30 percent of the time, which supports Prudential's policy of using occupancy sensors in conference rooms and similar spaces to save energy.

THE EMPLOYEES DELTA INTERVIEWED WERE GENERALLY VERY SATISFIED WITH THE OPEN-OFFICE LIGHTING.

The Cornerstone Room. This is a large, rectangular multipurpose conference room for meetings and audio-visual presentations to clients. The lighting is a combination of T8 uplights and recessed PAR20 incandescent downlights. These are controlled by separate four-way switches, or dimmers. The uplights are configured in a U-shape and provide an average of 21 footcandles on the conference room table. At full output, the dimmable downlights provide an average of six fc. These are used for note-taking during video presentations when too much light would interfere with screen visibility. Wall slots at the end of each room smoothly wash the walls with a vertical illuminance ratio of 6-to-1. One of the two longer walls has windows fitted with blackout blinds, and the opposite wall has full-height glass panels. The afternoon sun can add as much as 150 fc to the conference table. While the appearance of sunlight in the room is pleasing, the strong patterns of light are uncomfortable, so the blinds are generally pulled down when the room is in use.

Where finishes were darker, some employees felt that light levels were insufficient.



Mailroom. Every week mailroom workers handle up to 75,000 pieces of mail. Before the workers moved in, furniture was rearranged to streamline operations. Overhead bins 6-ft 5-in. tall replaced shorter units, but the layout of the indirect lighting system was not modified to reflect this change, thus the resulting lighting levels are lower than anticipated.

Project evaluation

Energy impact. Using input watts from manufacturers' literature, the DELTA team calculated the lighting power density (LPD) for the entire office building. For conditioned space, the maximum LPD is 0.99W per sq ft. During core business hours (9:00 a.m. to 3:00 p.m.) the in-use power density is 0.85 W/sq ft. Most of this difference reflects DELTA's observation that only about half the task lights were on during core hours. The New York State Conservation Construction Code would have allowed 2.40 W/sq ft for a similar building.

Controls. Because the building has limited daylight penetration, the owner and lighting designer agreed that a sophisticated control system that would operate lighting based on interior daylight levels would not save enough energy to be a sound investment. Instead a more economical system of time clocks, described above, was installed.

Occupancy Sensors. Occupancy sensors were used to control lighting in three types of spaces: mechanical and electrical spaces, vending and copy areas, and managers' conference rooms. The sensors are of the passive-infrared variety (PIR) which detect the movement of heat sources, such as people, in these areas, and turn lights on when they sense movement. If they don't detect motion after a preset period of time—7 seconds to 15 minutes—they turn the lights off. The sensors have lenses with a detection area of 180 degrees from side to side. At most locations they have been mounted inside the room, adjacent to the door opening, and usually activate the lights as soon as someone walks into the room. In managers' conference rooms, the sensors are mounted inside the room just beyond the door swing. Because these doors are generally left open, occasionally lights will be activated when someone walks by the door outside the room. Lights also may go off if a person sits still for a long period of time.

Control of Daylight. Windows are tinted to limit transmission of radiant energy (heat and light) to only 10 percent to provide employees with views while limiting heat gain. Unfortunately, direct sunlight washes out some VDT screens during the early morning or late in the day due to low sun angles. The VDTs' locations are fixed in the workstations, so employees can't move them out of the sun. The owner plans to reduce this glare by installing horizontal blinds on all of the perimeter windows.

Environmental and economic analysis

The DELTA evaluation team observed the energy usage on a typical day and night compared to a hypothetical model, ASHRAE/IES Standard 90.1,





Managers' conference rooms (typical above) and the mail room (right) are illuminated using indirect uplighting only. As the mailroom was reorganized after the lighting was designed, some refinements may be needed.

which has an allowable lighting power density of 1.57W/sq ft to arrive at the following conclusions: At the building's current electrical rate of 11 cents/kWh, the calculated annual dollar savings is $41,456; $33,008 from lighting, and $8,448 from reduced hvac load.

The cost of the lighting for the entire building, including luminaires, lamps, branch circuiting, and installation was $672,000, or about $8 per sq ft. This cost is consistent with other installations of indirect lighting with electronic ballasts for VDT spaces.

According to estimates from the United States Environmental Protection Agency, reduced energy consumption from this building, compared to the ASHRAE/IES 90.1 LPD of 1.57W/sq ft will result, annually, in lowering CO_2 power-plant emissions by 292 tons, lowering SO_2 by 5,069 pounds, and lowering NO_X compounds by 2,184 pounds. These materials contribute to global warming, acid rain, and smog.

Staff Response: The DELTA team surveyed 282 respondents about their impressions of the lighting, and what, if anything could be improved. Specifically, DELTA asked about visual comfort, task visibility, window glare, reactions to appearance, maintenance, and comparisons to previous offices. Generally, employees were very satisfied with the appearance of the lighting in the open offices and mailroom, and considered it comfortable. Many had never worked under indirect lighting before and seemed to be satisfied with the appearance of the indirect lighting compared to the direct lighting in their previous offices. Over 40 percent believe that the lighting is better than in similar work spaces in other buildings. However, 13 to 15 percent of the open-office employees and 27 percent of the mailroom employees said their workplaces are too dim. Few employees reported that light from electric sources was reflecting in their VDT screens. However, several employees reported problems with direct sunlight hitting their screens in late afternoon.

Lessons learned

"Luminance balancing" works. Workers had very few complaints about glare or VDT reflections. The indirect-lighting system and the tasklighting were designed in conjunction with the interior finishes of the building to produce luminance ratios that meet IES RP-1 recommendations. The benefits of this design approach are evident in the survey responses, where 80 percent of the employees said the lighting is comfortable.

Low-light transmission windows do not reduce direct sunlight enough to eliminate glare on VDT screens. The tinted-glass windows are cost effective in reducing hvac loads, but horizontal blinds are needed so employees have the option of blocking the sun.

Some people prefer higher light levels for office spaces. Some of the workers said they would like more light, even though they said they could see well enough to do their work. Additional task lighting boosts light levels for reading tasks, but some employees still feel the level is insufficient, or too localized. Increasing ambient light levels would help eliminate this complaint. However, significant increases in the lighting power density could also reduce VDT visibility, and increase both initial cost and the annual operating cost of the lighting system.

Passersby can trigger occupancy sensors inside a room. Occasionally, the lights come on when someone walks past an empty conference room. The manufacturer of the PIR occupancy sensor suggests applying a small piece of opaque tape to cover the corridor-side portion of the sensor's lens to reduce its coverage. ■

Manufacturers' Sources

Pendant-mounted indirect uplights, wall-mounted fluorescent uplights; undercabinet task lights: *Peerless Lighting Corporation*

Recessed fluorescent downlights, recessed fluorescent parabolics; fluorescent wall-washers: *Lithonia Lighting*

Decorative sconces: *Shaper Lighting; Flos*

Recessed downlights with decorative glass-disk accents: *Staff Lighting*

Occupancy sensors: *Leviton*

Time clock: *Tork*

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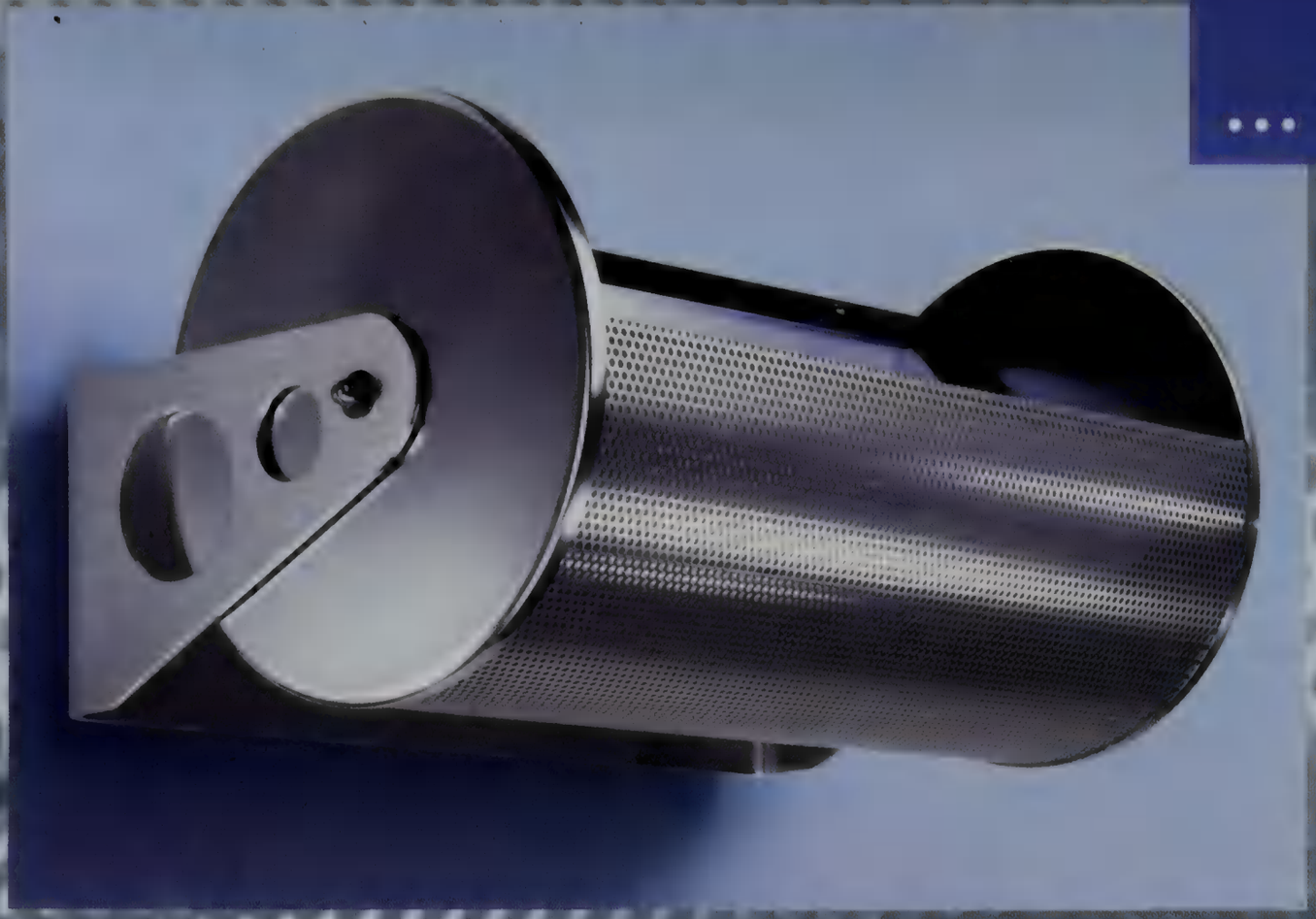
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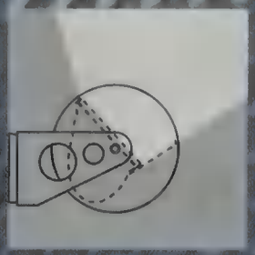
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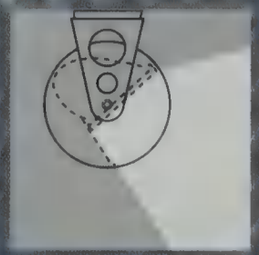
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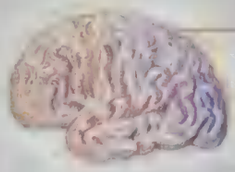
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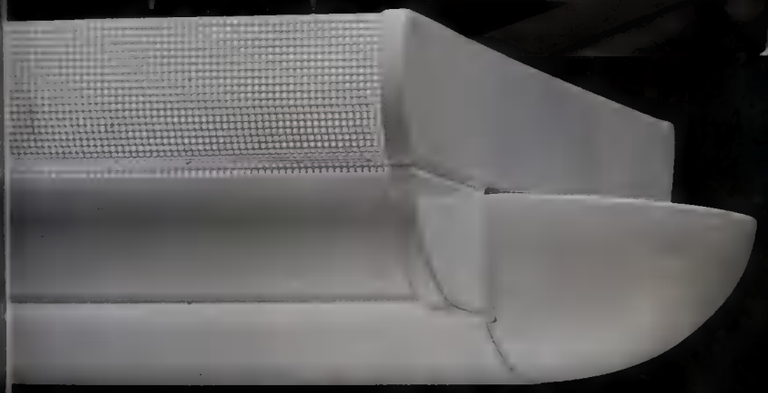


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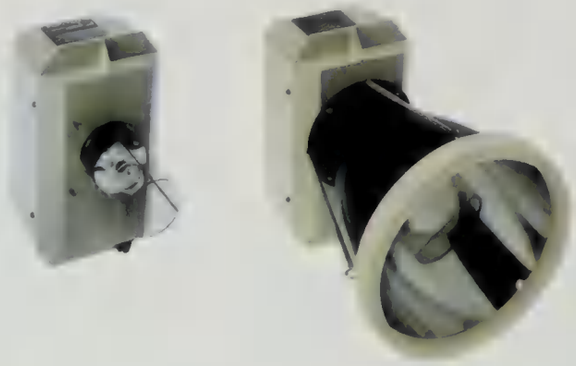
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Sulfur Lighting Technology: Now Get It Off-the-Shelf

by Lindsay Audin



The next step in the evolution of light sources has been taken: Lighting designers can now avail themselves of standard, UL-approved lighting equipment using sulfur lamp technology. Fusion Lighting, Baltimore, Md., is now offering OEMs its Solar 1000 product, a 1.3kW unit capable of producing 130,000 lumens, either with a reflector or a lightpipe. Many improvements have been made to this product since it was brought to the attention of RECORD readers [RECORD LIGHTING, February 1995, page 12], and other vendors are now supplying ancillary equipment, such as cylindrical light guides and dimming systems.

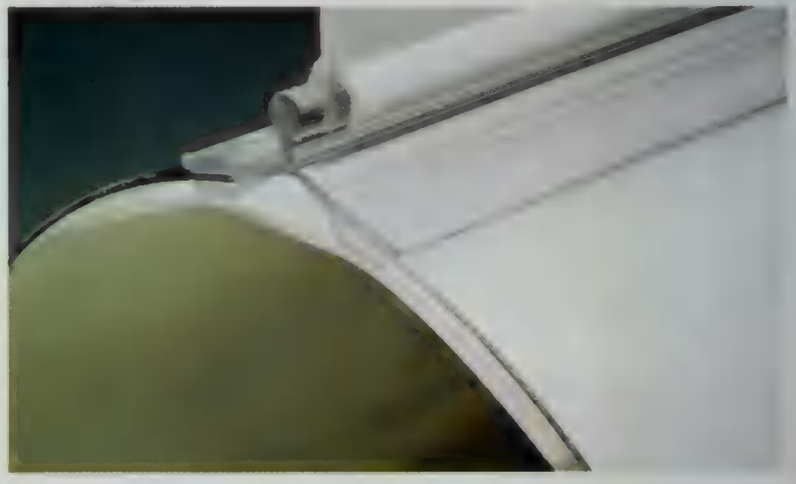
Unlike fluorescent lamps that stimulate mercury to generate ultraviolet light and then convert it to visible light using phosphors, this system bombards sulfur-gas molecules with microwaves, causing them to emit visible light directly: no electrodes, no mercury, no phosphors. The net result is high efficiency (about 100 lumens/W) and a 79 CRI at 6,000K color temperature. Very little ultraviolet or infrared is emitted, making this source a possible winner in many applications. Fusion Lighting's Solar 1000 consists of a lamp (a hollow, sulfur gas-filled glass sphere on a stem), power supply (with .93 power factor), magnetron (to make the microwaves), and a motor assembly (to spin the lamp, thus maintaining constant light output).

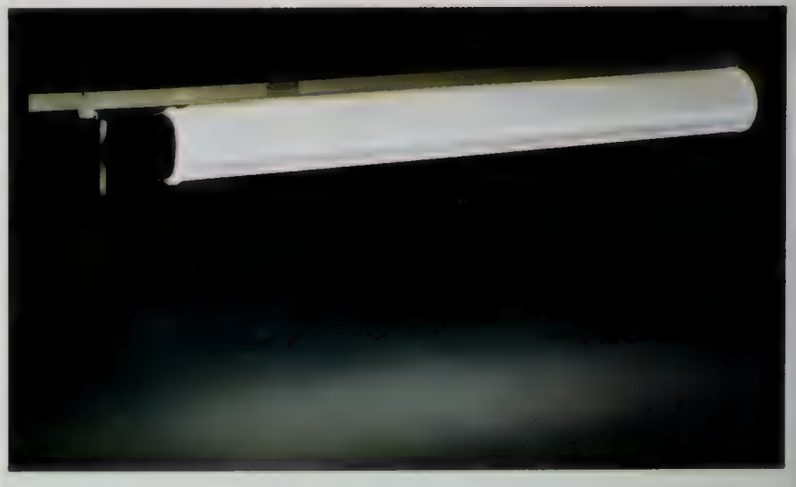
The biggest problem seems to be distributing this abundance of light. Early applications of this source have utilized light pipes to channel and distribute its light output. Cylinear Lighting Co., of Toledo, Ohio, provides the Solar 1000 with a hollow light guide (see figure) using prismatic and clear films to reflect and direct the light out of one side of the tube. Fiberart of St. Petersburg, Fla., is working on a a side-emitting fiber optic product, designed to replace neon signs. While not yet available in this country, CelsiusTech of Sweden is offering a dimmable Solar 1000 that would dim in the range of 20-to-100 percent output for 230V systems. Fusion Lighting has reportedly been developing its own dimming system.

Several innovative fixture styles are also in the works, including a cruciform light guide with a single Solar system at its intersection that would distribute light out each of the four rectangular light-guide legs.

Most applications of this equipment are in large open areas, such as atria, garages, and assembly and distribution centers. Early installations in this country have included the National Air and Space Museum, a Pontiac, Mich., auto plant, and several package-handling facilities. Overseas, sulfur lighting systems have also been installed in office complexes and shopping malls. While still relatively expensive compared to conventional alternatives, this new technology is rapidly carving out a niche for itself, and it's sure to continue to evolve. ■

The sulfur lighting unit (left, with and without reflector) attaches to a light guide (detail and assembled unit below).





Lindsay Audin is the president of EnergyWiz, Inc. and lighting research consultant to [illegible], a Colorado-based energy consulting firm. He can be reached via e-mail at [illegible].


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by B.J. Novitski

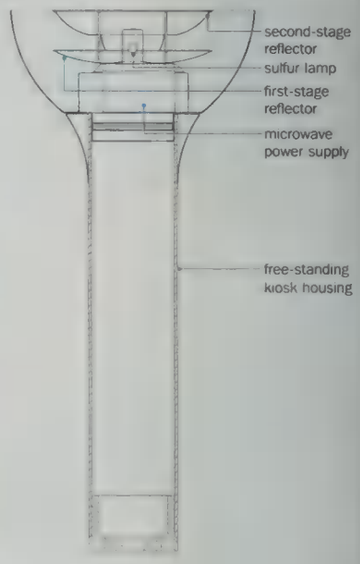
The challenge: to distribute the light from a brilliant point source uniformly throughout a large space. Is this a problem statement for a daylighting designer? Perhaps. But also for the multidisciplinary team that recently unveiled a breakthrough technology in Sacramento, Calif. The installation was the result of a collective effort of private lighting companies, a federally funded laboratory, and a large utility long known for its activism for energy efficiency and conservation. The fixtures are a pair of kiosks, each containing a single 1000-watt sulfur lamp. Together they uplight the lobby of the headquarters of the Sacramento Municipal Utility District (SMUD), a space previously illuminated by 46,000 watts. Designers of this prototype say that the fixtures will be suitable for a broad range of office, commercial, and industrial applications.

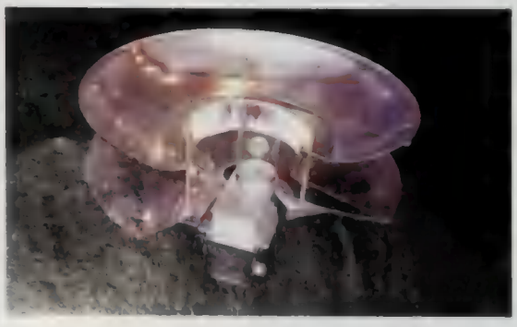
Sulfur lamps have been used for several years in outdoor and heavy industrial settings, where the light is often distributed via light guides, or light pipes. These are long tubes with reflective interiors that emit light along their length. Unfortunately, their efficiency is low, and the resulting glare makes them unsuitable for more confined interiors, such as in offices and commercial spaces, which consume a large proportion of lighting energy in the U.S. It has been estimated that about half of the $30 billion spent annually on indoor lighting could be saved through energy-efficient alternatives.

Solving the distribution problem was a collaborative effort between Cooper Lighting, makers of Halo, Metalux, McGraw-Edison, and other brands, and the Lighting Research Group of the Energy and Environment Division at Lawrence Berkeley Laboratories (LBL). They developed a two-stage reflector consisting of a shallow pan below a bowl that surrounds the lamp. Modifying the geometry of the reflectors changes the light-distribution pattern, enabling the fixture to accommodate a variety of ceiling heights (as low as 9 ft) and desired lighting levels.

The Sacramento prototypes are housed in free-standing kiosks which are tall enough to prevent direct views of the lamp or reflectors from eye-level. The assembly uplights a low-glare but reflective ceiling, specially designed by Armstrong for this purpose. Michael Siminovitch, principal investigator at LBL says, "By varying the distribution geometry and the relative spacing of the kiosks, a large range of light levels can be easily delivered." One kiosk can replace as many as 30 conventional ceiling fixtures in an open-office space, he adds. The fixture can also be mounted on a wall or suspended from the ceiling, adding to its flexibility in interior applications. Its efficiency rating of 85 to 88 percent is as much as 25-percent better than ratings for light guides and is one of the highest ratings ever scored for any white light source/fixture system.







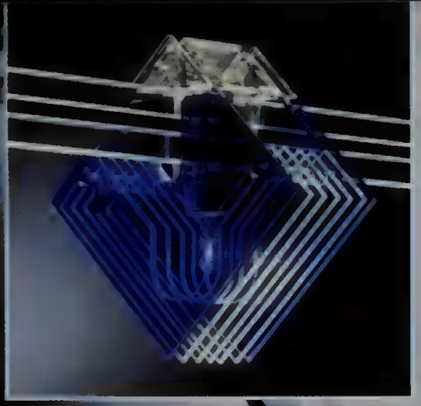
This two-stage reflector, developed by the Lighting Research Group at Lawrence Berkeley Laboratories and Cooper Lighting, is the heart of the new lighting kiosk.

An important footnote to this technical achievement is the unique collaboration which was essential to its success. Even the best science does not guarantee manufacturability or commercial feasibility. "Working closely with Cooper Lighting was critical to this research," Siminovitch notes. The company, which has long prided itself on its commitment to efficiency and quality, now lauds the cooperative spirit embodied in this government/private-sector partnership. Cooper Lighting president Fritz Zeck noted at the introduction, "What you see today is more than just a demonstration of new lighting; it's proof that cooperation will pave the way for new products and new markets. Not only companies, but governmental organizations can improve upon what we know, what we have, and how we live more effectively by working harmoniously together toward a goal."

This is surely just the beginning. Just as creative designers never stop developing ways to distribute sunlight throughout interior spaces, architects and lighting designers are going to see this breakthrough prototype as raw material from which to craft efficient, productive, and enjoyable lighting environments. ■

B.J. Novitski is a writer specializing in architectural technology, education, and [illegible] based in Eugene, Oregon.





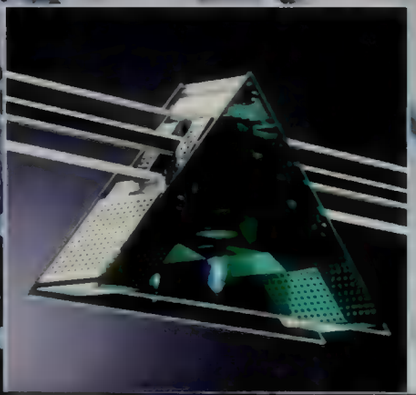


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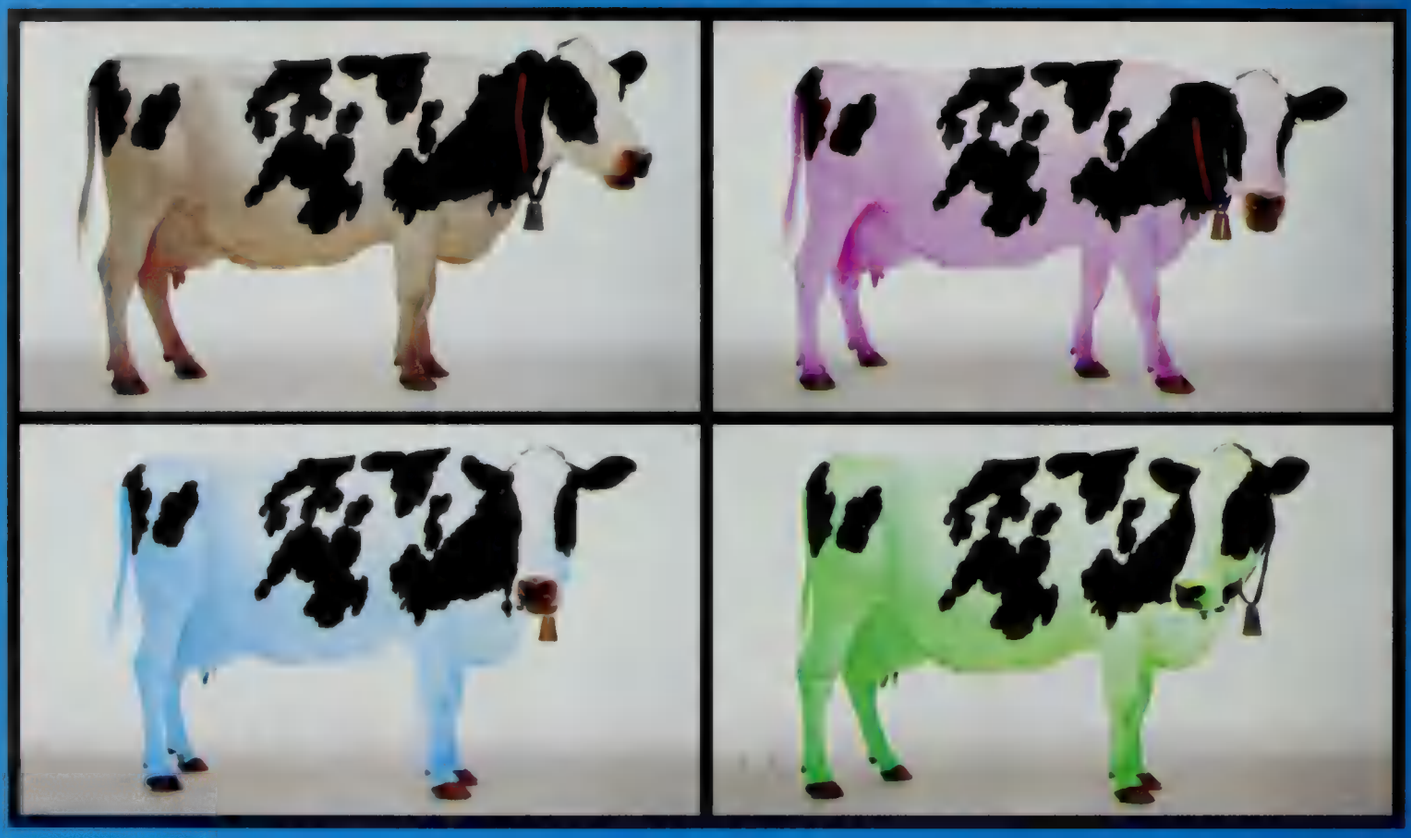


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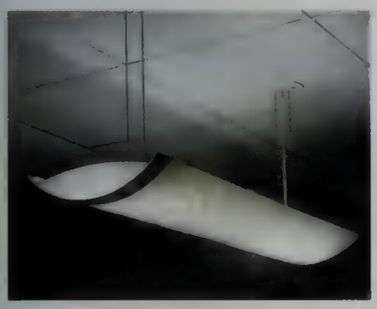
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▾ Direct/indirect pendant

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▾ LED exit signs

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► Polychromatic illumination

Lighting designer Ernesto Gismondi says his new Metamorfosi "create atmospheres." Luminaires have miniature, computer-controlled projectors that direct light from three 100W halogens through red, blue, and green dichroic filters. Blended, these beams become a single color that varies as the illumination intensity is altered. 800/359-7040. Artemide, Farmingdale, N.Y. **CIRCLE 252**



▴ In-grade floodlights

An extension of the Nite Star MR16 exterior fixture line, the Well Star can be used in the most rugged applications subject to heavy automotive and pedestrian traffic. A solid-brass well cover and tempered-glass lens resists breakage from impact in "drive-over" locations. Housing is made of a plastic-composite, and can be specified with a concrete-pour collar where a completely flush installation is required. A stainless-steel aiming bracket permits adjusting the spot over a 35-degree range; well cover is secured by recessed, tamperproof screws. 209/255-5300. B-K Lighting, Inc., Fresno, Calif. **CIRCLE 253**

▾ Low-mercury HPS lamps

Philips has extended its environmentally benign Alto technology to its high-pressure sodium lamps. With 75 percent less mercury than other HID lamps, Alto HPS lamps meet EPA standards for non-hazardous disposal. 800/631-1259. Philips Lighting Co., Somerset, N.J. **CIRCLE 255**



▾ Decorative wrought iron

Hand forged, 39-in. tall lantern is from an extensive line of interior and exterior lighting that incorporates the grace and detail of Colonial-era Mexico. Finish options include rusted colors, verde, and antiqued gold. 818/508-0993. Arté de Mexico, Burbank, Calif. **CIRCLE 256**



◂ "Floating" rail system

A low-voltage, halogen installation, MonoRail can be bent by hand into simple, smooth curves to follow or accent- uate architectural shapes. Adjustable standoffs are "almost invisible." Rail can be specified in chrome, gold, or satin-nickel finishes; system is designed to accept individual MR16 lampholders of up to 75 watts each. At only 2-ins. square, fittings such as junction boxes and power feeds are neat and unobtrusive. Decorative lampholders include glass pendants and the aimable Aero light, pictured. 773/252-0008. Tech Lighting, Chicago. **CIRCLE 254**





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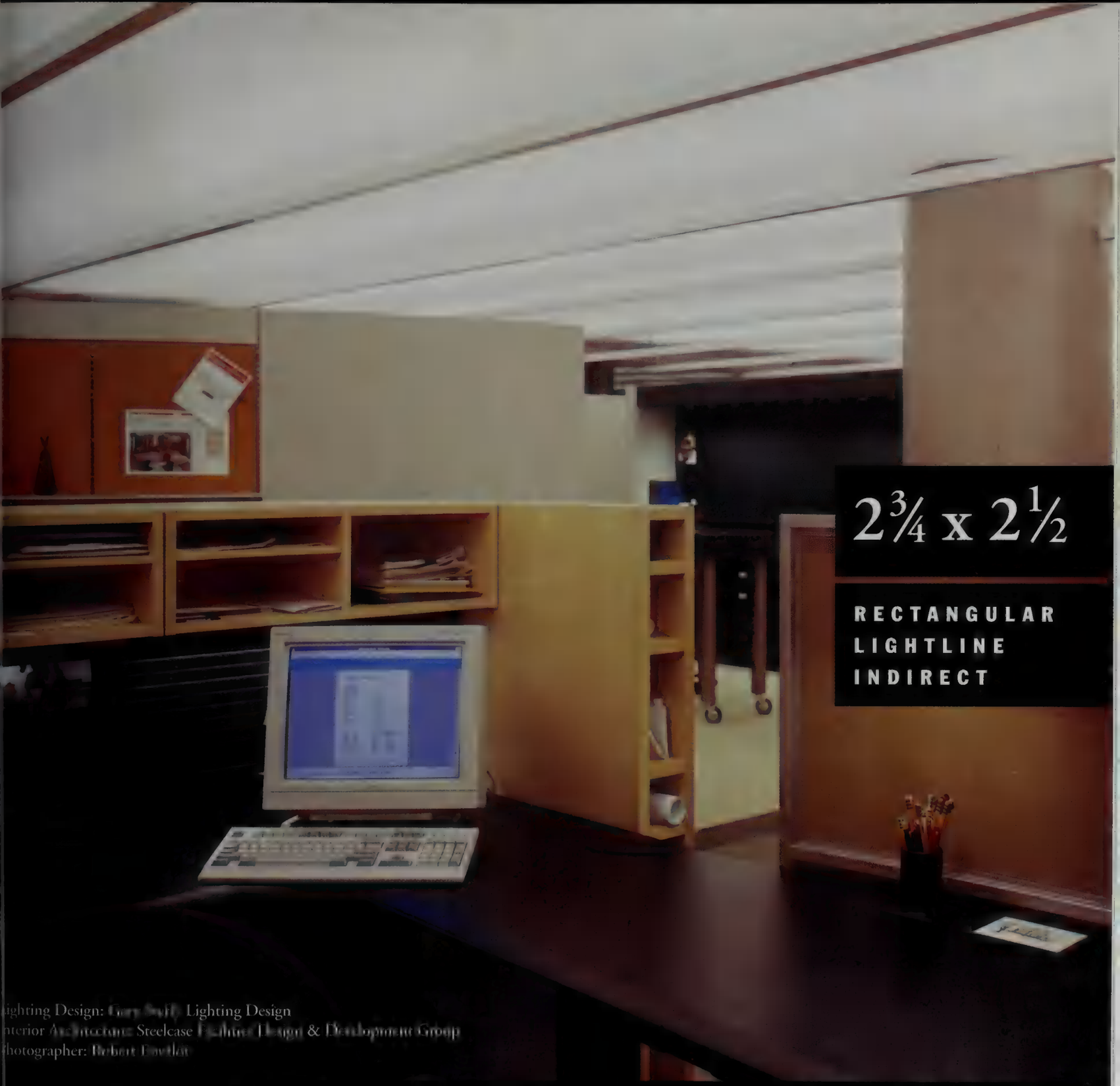
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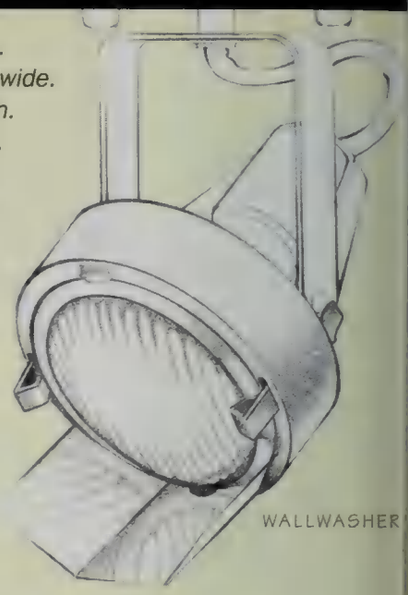
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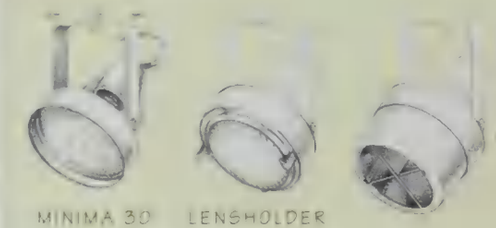
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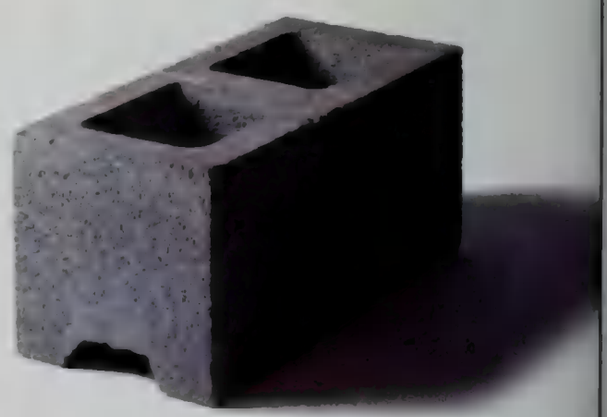


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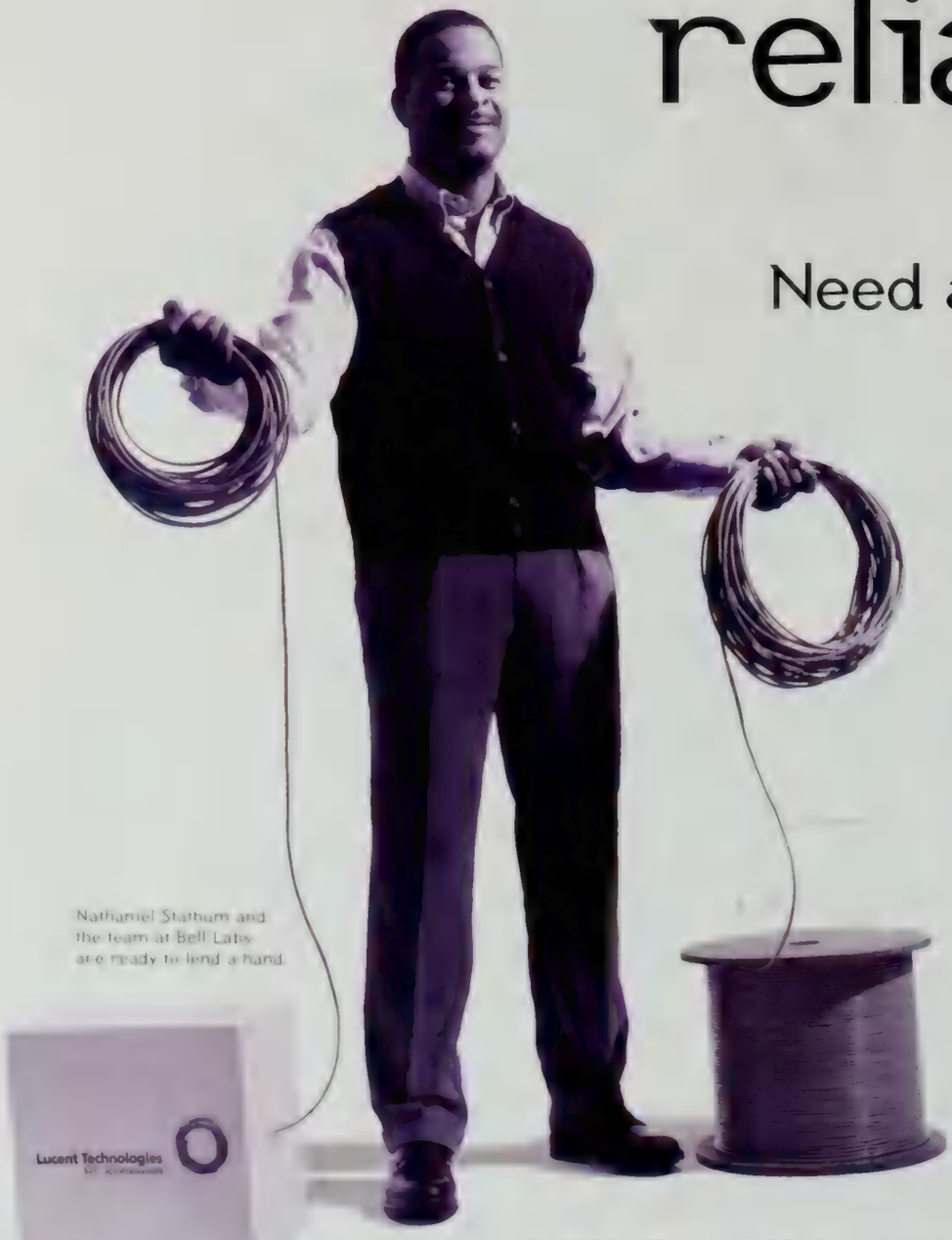
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CIRCLE 61 ON INQUIRY CARD

On the one hand, you need cable.

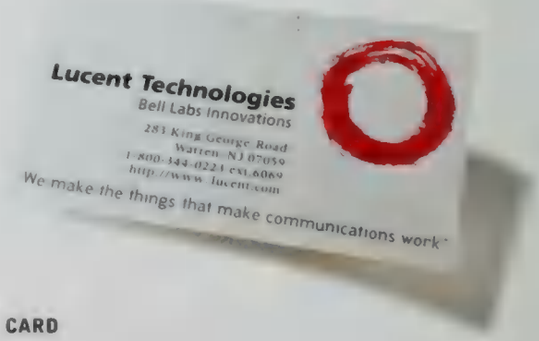
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CIRCLE 62 ON INQUIRY CARD

How Do We Wire the Ever-Changing Office?

WHILE STANDARDIZATION IS SIMPLIFYING TELECOM-CABLE DESIGN, "ALTERNATIVE" OFFICE SCHEMES ARE COMPLICATING IT.

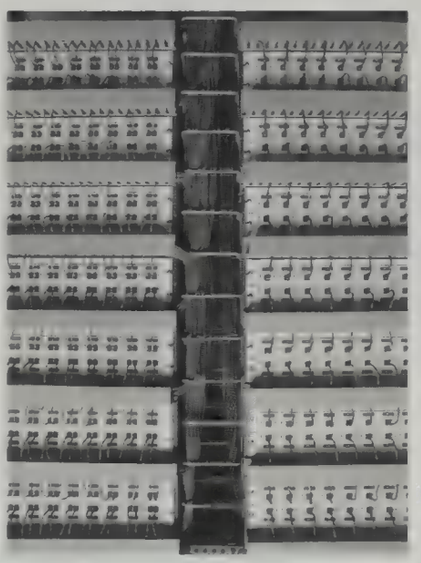
by Walter Cooper and Kenneth Silver

Alternative approaches to work—networking, "hoteling," and teaming—are becoming increasingly important in the American workplace. And these new ways of working are driving changes in office buildings' infrastructure, including wiring for electrical power, telecommunications, and building-controls systems.

On one hand, recent advances in wire and cable technology, coupled with the development of new standards for their use, have made it easier than ever for designers to choose what type of wire or cable to install. In addition, a recent change in the standard that governs commercial wiring has made it possible for architects to meet their clients' desire for increased flexibility by using "zoned" wiring systems, which permit some reshuffling of computers within an office plan with minimal rewiring. These advances, however, come with strings attached. Today's more technically advanced wires and cables must be handled with increased care to avoid damage. And, even though the new zoned systems require a great deal of extra planning and investment, they only satisfy clients' desires for more flexible office systems to a very limited extent.

Appropriately accommodating WANs and LANs

Rapid change in wide-area networks (WANs) and the ubiquity, nowadays, of local area networks (LANs) are forcing a basic rethinking of office-building telecommunications-infrastructure design. The term WAN today commonly refers to a collection of cables that carry signals from the building to and from an outside source. Because of the importance of uninterrupted communications, WAN systems typically are configured as a ring containing two points of access and egress from the building. This system design, known as a self-healing ring, prevents network disruption by allowing signals to travel via the secondary entrance if a break occurs somewhere along the cable loop.



Building tenants not only benefit from additional protection from system failure, they get built-in price competition, because this kind of system design is used by rival telephone companies to install networks. These competing telephone companies may be willing to pay for the installation of their own cables and equipment for the opportunity to sell their services to tenants. As a result, building occupants not only have more choice, they can switch companies in case of emergency.

Such communication networks require a physical infrastructure that mirrors their ring configurations. These and other network requirements should be considered from the very earliest stage of the design process. Architects must provide at least two service entries into the building for wire connections. Where network rings are extended from floor to floor, multiple risers are needed, even in buildings with relatively small floorplates. In addition, space must be set aside in which the many possible vendors of WAN services may locate their equipment. Designers must take care to provide enough space in both telecom rooms and service entrance conduit banks for several WAN suppliers to use.

Wiring by zone

Until very recently, wiring standards haven't addressed the dramatically increasing need—fostered by various teamwork models that businesses are adopting—for flexibility and portability of network technology within the office itself. That's changed, however, with the 1996 TSB-75 revision of the Electronic Industries Association (EIA) 568 standard for commercial wiring, which now permits zone wiring. Previously, individual workstations had to be hard-wired—that is, connected to a telecommunications closet by an uninterrupted length of cable. With this revision, however, workstations can be plugged into multi-user boxes arranged on a grid beneath an access floor. [See drawings next page for comparison.) In some workplaces, this offers immense advantages by minimizing rewiring when reconfiguring furniture and equipment.

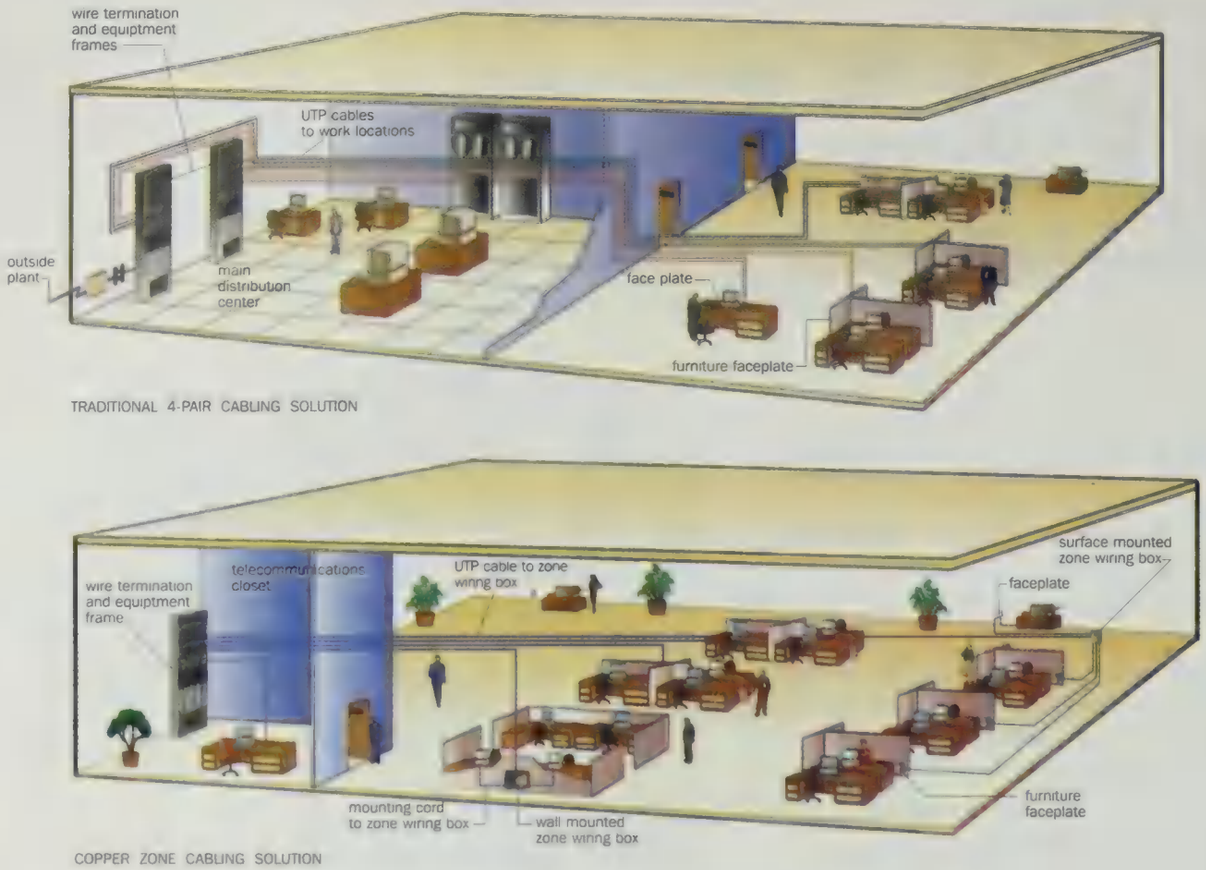
Walter Cooper is a principal and Kenneth Silver is a senior associate at Flack + Kurtz, Consulting Engineers, New York City. The firm specializes in consulting for such intense users of data as Wall Street brokerages and investment firms.

Continuing Education *This month's installment of the ARCHITECTURAL RECORD/AIA continuing-education series covers the design of building telecommunications, power, and electronic infrastructure . Use the following learning objectives to focus your study. After reading this article, complete the questions (pages 214) and check your answers (page 216). AIA members may fill out the self-report form and send it in for two AIA Learning Units—Mark Scher, director, AIA Continuing Education Programs and Products*

Learning Objectives *After reading the article and completing the exercises, you will be able to:*

1. *List two positive implications for building tenants resulting from cable improvements and wide-area network configurations.*

2. *Discuss the pros and cons of underfloor, ceiling and wall based, wireless, smart device, and poke-through wire handling technologies and approaches.*



COURTESY LUCENT TECHNOLOGIES

Though zoned wire-delivery systems (bottom drawing) are not for everyone, their chief advantage is that users can move or reconfigure a workstation without changing wiring all the way back to the telecommunications closet, as is required with conventional systems (top drawing).

As with almost any technical advance, however, the wiring-standards revision also carries some disadvantages that may make it inappropriate. These zoned wiring plans work most effectively as underfloor systems; they shouldn't be considered unless a client is willing to pay the higher initial costs associated with access floors. Zoned wiring systems are not well suited for use above ceilings, for example, because zone boxes need to be accessible on a routine basis, and ceiling boxes are deemed too hard to reach. Mounting multi-user boxes to columns or walls is often undesirable because wiring ends up exposed—lying on floors or dangling from walls after furniture is rearranged.

The proliferation of connection points in a zoned system also magnifies the complexity of system administration. A zoned system can make it more difficult to keep track of changes, and can complicate the task of troubleshooting when problems arise. Also, the addition of break points at the boxes decreases a wiring system's "headroom," or available transmission capacity. This means that zoned systems that are perfectly adequate for current technologies may prove inadequate for new communications devices that demand greater bandwidth or data capacity. If physical furniture reconfigurations are not actually very frequent, it makes economic sense to stick with wiring each device all the way to the closet—both to avoid the zoned system's greater initial cost and to avoid limiting the usefulness of the cabling system.

Still in the future: "plug-and-play" networks

Wouldn't it be nice to access your computer network from any desk, and have calls to your phone routed automatically to wherever you are? Despite the advent of zoned systems, this coveted dream is not yet a practical reality. Although this portability may be enhanced by wireless communications, it is an unhappy fact that the currently achievable degree of portability is much lower inside the office than outside. Part of the reason may have to do with expectations: outside the office, users have gotten used to the limitations of modems, analog phone lines, and cellular phones, and are much more willing to put up with a variety of glitches that they'd find unacceptable in the office setting.

Unfortunately, even with zoned underfloor systems, moving a computer or a telephone line from one location to another isn't yet a simple matter of taking a plug from one socket and plugging it into another. Office administrators generally do not encourage telecommunications-equipment portability because it increases equipment maintenance. Likewise, LANs cannot accommodate much movement of computer equipment because of limitations in the way networks are structured. Though a single LAN may incorporate a large number of machines, current network technology dictates that the users be subdivided into groups of no more than about 25. Thus, if a terminal is moved outside its subgroup, administration of the system becomes difficult and communication may begin to break down. (The few "portable" systems that do exist are fairly small, and require a large systems-support staff.)

Wireless technologies are not the magic bullet

Another apparently simple solution is wireless technology, with its potential to avoid a wide range of costly hardware. Today's rapidly developing and proliferating wireless technologies are having a much greater impact outside buildings than inside, where their limited data capacity is a significant drawback. Wireless technologies have, however, already demonstrated significant usefulness in building types in which a high need for portability and mobility is coupled with relatively low data demand. In convention centers, for example, wireless systems are appropriate because the space is reconfigured frequently, there is a low device density, and the need for mobility is high.

In typical office environments, wireless communications technologies are unlikely to come into widespread use in the near future. In addition to slow data-transmission rates, there is another, possibly insur-

ARE OFFICES OVER POWERED?

The amount of electricity actually required to run a contemporary office building—and the amount that such facilities will require in the near future—is a matter of contentious debate. Today's de facto design standard of about 5 to 6 watts per sq ft is probably twice as high as it needs to be—and may quickly become as much as four times too high. Overdesigning power systems is wasteful in two ways: in the cost of installing and operating the power system itself, and in oversizing the air-conditioning, since cooling assumptions are based on the power designed for the building.

Though owners and designers often assume office power use will increase, office device-density has probably reached its maximum. The amalgamation of various functions into single pieces of equipment is likely to keep numbers stable. Also, under EPA's Energy Star program, manufacturers of computers and other office equipment have been voluntarily decreasing their products' power usage.

So far, these savings (see table), though phenomenal, mostly affect average load. Technical innovations arising out of laptop technology will begin lowering peak loads significantly. Reasonably priced flat screens will be widely used within 10 years. With their much lower power demand and heat generation, we may rapidly reach the point where a conservative power system design will call for an average of only 1.5 watts per sq ft. One-watt-per-sq-ft designs have been achieved in environmentally sensitive, showcase projects like the National Audubon Society headquarters and the Natural Resources Defense Council, both in New York City. These designs require committed clients.

Power-system design has also been affected as once-centralized data-processing machinery has shrunk in size and been dispersed throughout facilities. Dedicated computer rooms often need uninterruptible auxiliary power, augmented air conditioning, and special power-distribution units. Though servers will continue to shrink in size and increase in number, many will still need the power, hvac backup and security features that centralized data centers have always had. ■

		CONVENTIONAL OFFICE EQUIPMENT			"ENERGY STAR" OFFICE EQUIPMENT		
EQUIPMENT	NO. OF UNITS	ANNUAL ENERGY COSTS PER UNIT	TOTAL ANNUAL ENERGY COST	COST OVER 5 YEARS	ANNUAL ENERGY COSTS PER UNIT	TOTAL ANNUAL ENERGY COST	COST OVER 5 YEARS
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PRINTERS	30	$60.14	$1,804	$9,021	$21.47	$644	$3,221
COPIERS-MEDIUM	20	$99.64	$1,993	$9,964	$42.95	$859	$4,295
COPIERS-LARGE	10	$224.19	$2,242	$11,210	$93.64	$936	$4,682
PAPER COSTS	10	$2,250	$22,500	$112,500	$1,600	$16,000	$80,000
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SOURCE: ENVIRONMENTAL PROTECTION AGENCY

mountable obstacle: the available spectrum (radio frequency and infrared) is very limited, and, once it's gone, the system slows down or stops altogether. This "headroom" problem can be worsened by encryption schemes needed to ensure communications security when the signal is airborne. Generally, these encryption technologies reduce a system's throughput and complicate its operation.

Wireless communications confer little advantage in office environments where layout "churn" is infrequent. Since work stations require hard wiring for power and task lighting anyway, freeing them of the communications wire does little to augment flexibility. Ironically, wireless systems actually make internal reconfigurations of space and furniture more burdensome, because a great deal of care must be taken to ensure that the location of furniture and walls doesn't affect system performance. Also, wireless devices need batteries. Currently available batteries must frequently be recharged—on a wired device.

All these caveats aside, however, there's no question that wireless communications will play some—perhaps an increasing—role in future office environments. The mobility wireless can offer workers may, in niche functions, outweigh its disadvantages. Wireless systems will impose certain design constraints that architects need to become familiar with. For example, if antennas are to be concealed in ceilings, designers must be aware of the radio transparency of the materials they specify—and ceilings must incorporate wire pathways to service those antennas. (The obvious irony is that "wireless" systems actually require quite a bit of wiring!) Specific applications of wireless may call for specific design strategies. For instance, it would make sense to design the core of a million-sq-ft highrise to allow for an antenna system when a wireless system will link facilities-maintenance personnel throughout the building.

Whether or not a given facility uses wireless, the growth in mobile wireless communications systems is now providing architects with an additional challenge: designing accommodations for antennas on the exteriors of buildings. Owners are leasing their exterior real estate in major cities to telephone companies and other providers, who need more antennas to keep up with demand driven by cellular phones and pagers. Architects have already become adept at designing rooftops to accommodate antenna requirements; now they are being asked to add antennas at, say, five or six stories off the ground, or to specify radio-transparent surfaces to disguise antennas in the mechanical floors of highrises.

Where to wend wires

With the standardization of data and telecommunications protocols, there's no longer the proliferation of proprietary cabling that, a decade ago, seemed as if it might strangle us all in heaps of multicolored spaghetti. Although the standardization of telecom cable has not in every case meant that there's a smaller total amount of the stuff, the fact that there are fewer different kinds of cable to worry about—and that high-grade cable has gotten a lot thinner over the past few years—means that the volume of cable for each workstation has leveled off. This has changed the equation by which architects select wire-handling solutions.

Access flooring products have undergone great improvement in quality, as well, providing a much more solid feel than they used to. Also, access-floor tiles have gotten much thinner. This, coupled with thinner wire, has permitted a significant reduction in the depth of access flooring needed. (Just a few years ago, the minimum depth—slabtop to top of tile—was between six and eight in.; today, it's easy to get away with a depth of four in.) Moreover, access-floor voids can be used for ventilation as well as cable distribution—a strategy that's been fairly widely implemented in Europe. This may make access-floor systems more attractive in North America. Using underfloor ventilation in conjunction with a separate ceiling-panel radiant heating and cooling system seems especially promising [RECORD, October 1995, pages 70-85].

Access floors remain prohibitively expensive for many facilities, however. And, despite the fact that it's gotten shallower, access flooring presents a range of design problems—ramps, elevator offsets, slab depression, and so on—with which architects have become all too familiar.

Other types of underfloor distribution systems, such as *cellular floors*, have fallen out of general use in new buildings because of the difficulty of maintaining them and the core drilling and concrete work needed to utilize them over time. The in-slab duct systems with which many facilities were equipped in the recent past will remain usable, and it's important to note that the benefits and problems of the new types of cable affect them as well.

Poke-through wire handling has significant limitations, even though it has been popular for its low initial cost. (In poke-through installations, wire is carried from the workstation down through a floor penetration and runs along the ceiling of the floor below.) It is best suited to spaces with low device density—a large lobby, for example, that might have a single reception desk. It is difficult to move penetrations and patch them. And each hole through the slab weakens it, which is harmful to the building's structural integrity.

Ceiling- and wall-based distribution systems may offer a good compromise between cost and flexibility. A wide variety of ceiling- and wall-based wire management strategies have been worked out that respect the working style of particular clients.

More important, there is room enough in walls and ceilings to deal with the geometrical sensitivity of high-performance cable. Newer forms of high-grade cable are more delicate. For example, the minimum bending radius of copper cable is relatively large, more like that of optical fiber. High-performance cable, however, can't be just draped over ductwork in a ceiling, but must be adequately supported along its entire length. Pathways must incorporate plenty of room for soft bends and they must have multiple access points to allow the cable to be moved around (when necessary) without damage. And neither high-grade copper cable nor optical fiber will tolerate being pulled through long lengths of conduit. To avoid damage, conduit-enclosed distribution systems require pull-boxes at frequent intervals, even in a building core. Pull-boxes aren't only expensive—they're also big, which means that some care must be taken to provide room for them within the distribution system.

In mapping out cable pathways, designers must, of course, be careful that telecom and power cable are placed in separate conduits and that minimum distances between the two be maintained for data integrity. However, there is also a 3-in. required distance between telecom cable and fluorescent light fixtures. Electrical noise generated by the ballasts of fluorescent lamps may have an effect on the performance of high-speed data systems.

Progress in controls technology

Standardizing building-controls protocols would make life easier for both designers and facilities managers, but progress has been slower and more uneven than the standardization of voice and data electronics. What this means is that the degree to which control systems and devices made by different manufacturers can be integrated isn't yet nearly as high as the degree of compatibility between different data and telecommunications systems and devices. The delay in standardization, caused in part by many building-controls manufacturers' resistance to adopting universal, nonproprietary protocols, is, however, beginning to abate. More and more manufacturers are choosing to use the inexpensive, flexible protocols developed by suppliers of computer-network hardware, software, and services, such as Echelon Corporation. This trend is gradually leading to a de facto standardization of building-controls systems. Echelon's LONworks is widely used, but as yet no company's standards have come to dominate the industry.

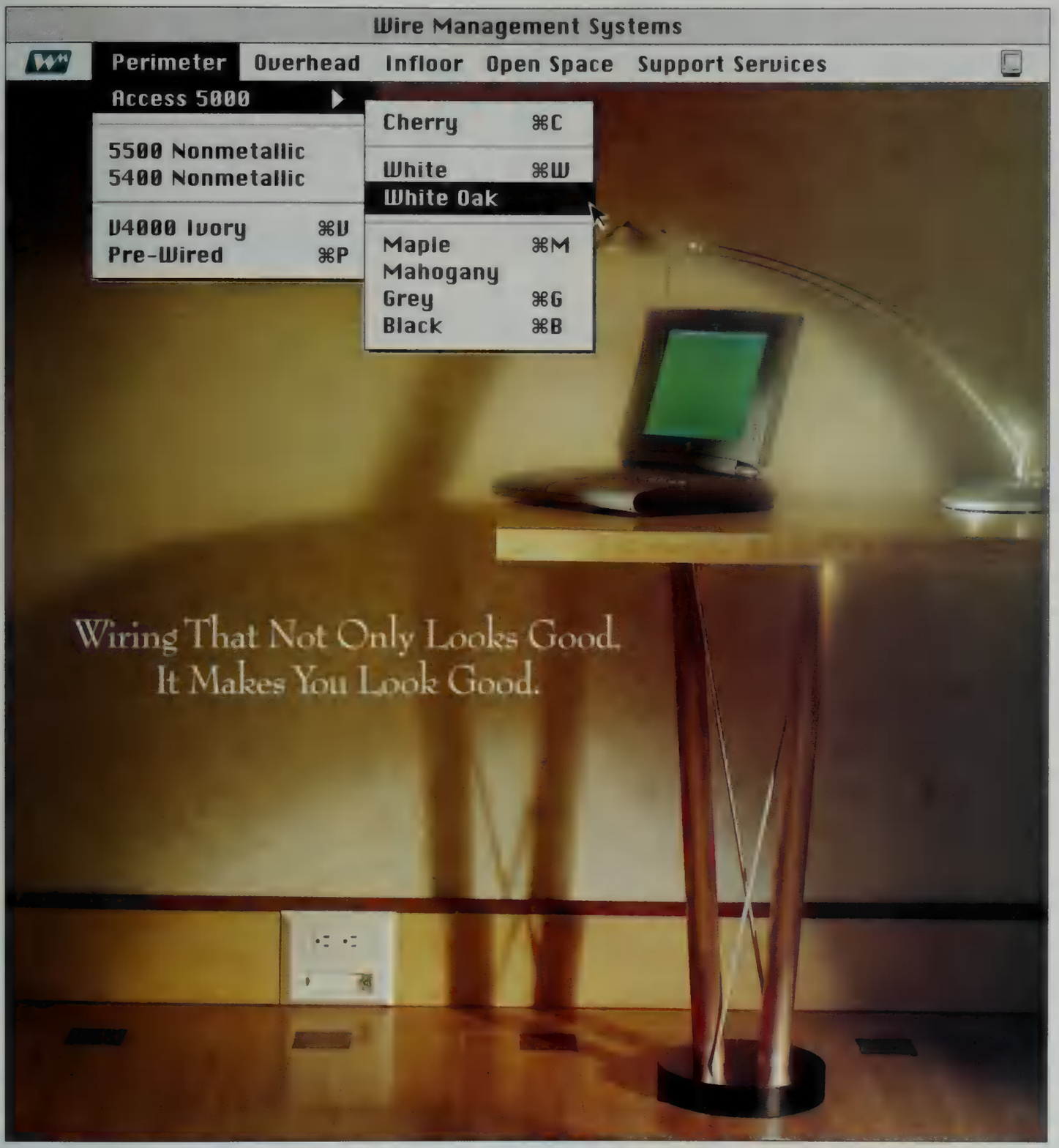
Two contrary control trends are muddying our view of the future. On the one hand, building "intelligence" has been shifting away from centralized systems to individual devices. "Smart" light switches, motion detectors, and the like are examples of products that eliminate control functions once operated from a central building-management system. Since such devices don't need a wire to the central system, the multiplication of these independently operating devices should reduce hard-wire costs and complexity. However, such devices sometimes do strange things: a motion detector may switch the lights off on a motionless worker. On the other hand, microchip intelligence can now be readily built into more building products, which means that more products are "wired-in" to the building. "Smart" window glazing, for instance, can change its opacity and reflectivity according to external weather conditions, internal heating and cooling needs, or user desire. Since many of these new devices will need connections to a building-wide control system, the capacity of the control system will have to increase, and wires, contact points, and sensors will actually increase.

The retrofit challenge

Among the benefits of smaller, more standardized cabling systems is that the retrofitting of wire- and cable-distribution systems for older buildings has become generally a great deal easier. Historic preservation or adaptive re-use projects, however, can be just as nightmarish as ever. Such variables as small rooms, masonry partitions, and irreplaceable historic finishes that can't be altered make the job of routing wire enormously complicated. Even if the area to be wired theoretically meets cable-length and connection-point limitations, the kind of over-under-sideways-and-through routing that's needed in many preservation projects sometimes increases those distances unacceptably. Moreover, it is difficult to design in flexibility for future changes.

Buildings with very large floorplates—ironically often built for layout efficiency—may face similar problems. To meet wiring-distance maximums, distribution closets may need to be distributed at intervals around the floor, which may make layouts more complex. It is in such difficult circumstances, that wireless systems may offer a solution despite the limitations of the technology.

Near-revolutionary changes are in the offing. They are not telecom related, but are due to the rapidly shrinking electrical-power needs of office machines. Already, many designers are oversizing power systems, anticipating that power-hogging PCs, printers, fax machines, and copiers will continue to burgeon. Instead, power needs are stabilizing and may soon decline as energy-conserving equipment comes into wider use (page 175) and once-separate pieces of equipment (computing, fax, telephony) are combined. Other innovations arising from laptop-computer technology will also reduce energy needs, especially all-important peak loads. Lower-voltage busses, more efficient circuiting, and complementary metal-oxide semiconductor technology (CMOS) are all coming into wider use. Inexpensive flat-screen technology will move rapidly into the desktop market and may make the greatest difference of all, since such screens will require as little as one-eighth the power of today's cathode-ray-tube (CRT) monitors. They will radiate less heat too. Flat screens will also alter office lighting design because they are less affected by glare, and their thinness will allow much greater desktop-design possibilities.■



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Rules: Projects delineated can be real, potential, or conceptual, but must not have been previously published in a design or computer journal as either editorial or advertising. Images prepared solely for promotional use by manufacturers are also ineligible. An entry may be created on any platform, using any hardware or software. Submit hard copy (maximum size: 11 in. by 17 in.), 35mm slides, or VHS cassette (the latter only for animations). Submit single images except where a suite of images is essential to describe the concept. Entries must be received by Wednesday, February 26, 1997. They remain property of owner, but may be republished in print and electronically. Entries must truly represent role of collaborators, firms, and clients. Include a stamped, self-addressed envelope for return of entry.

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Please tell us the hardware, software, and output devices you used. List by company and brand name (i.e., Autodesk AutoCAD 12, Apple Power Macintosh 6100)

Names of collaborators (firms or individuals) who should be credited _____

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output 1 _____ output 2 _____ output 3 _____ output 4 _____

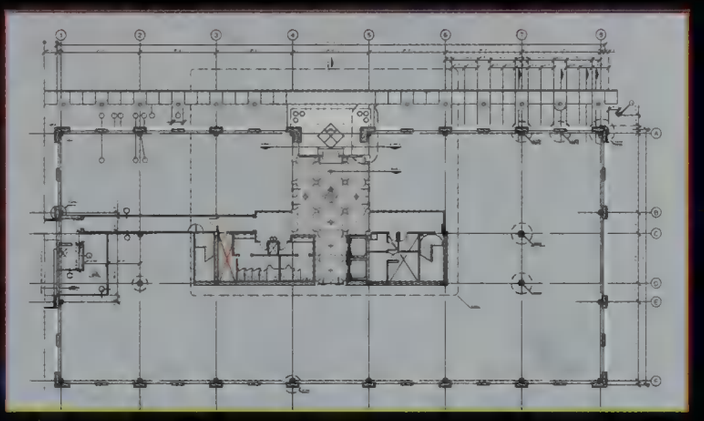
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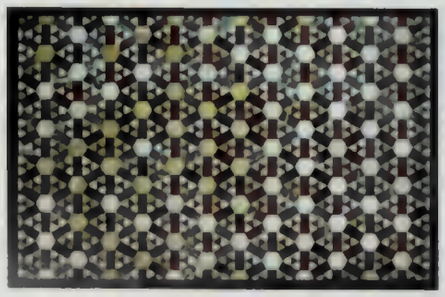
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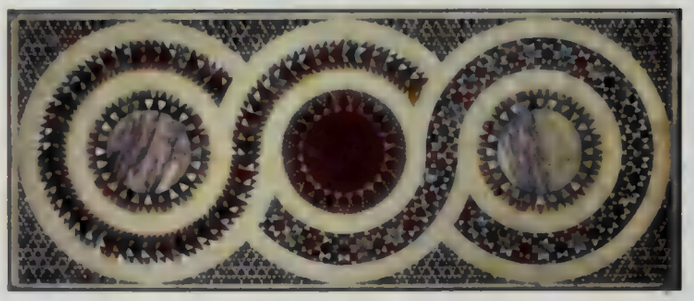
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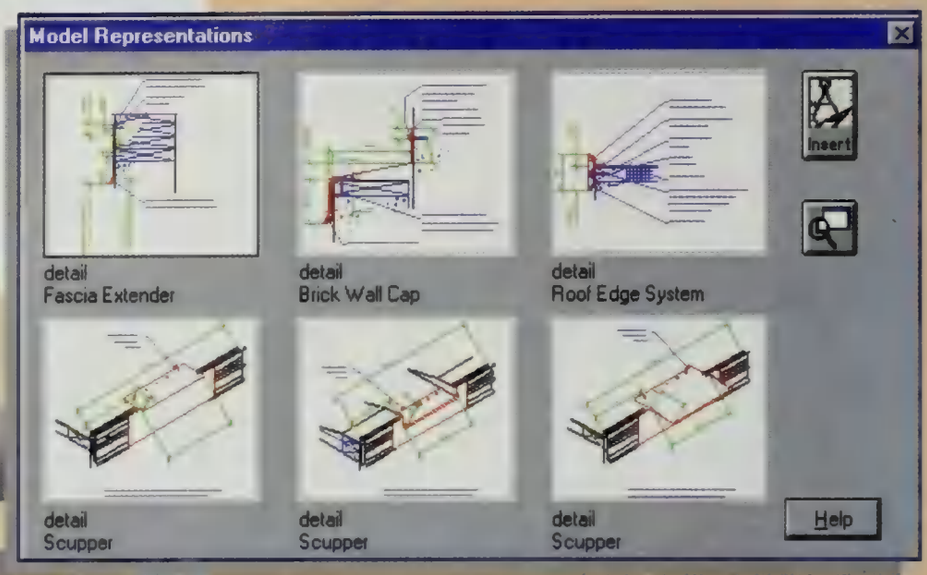
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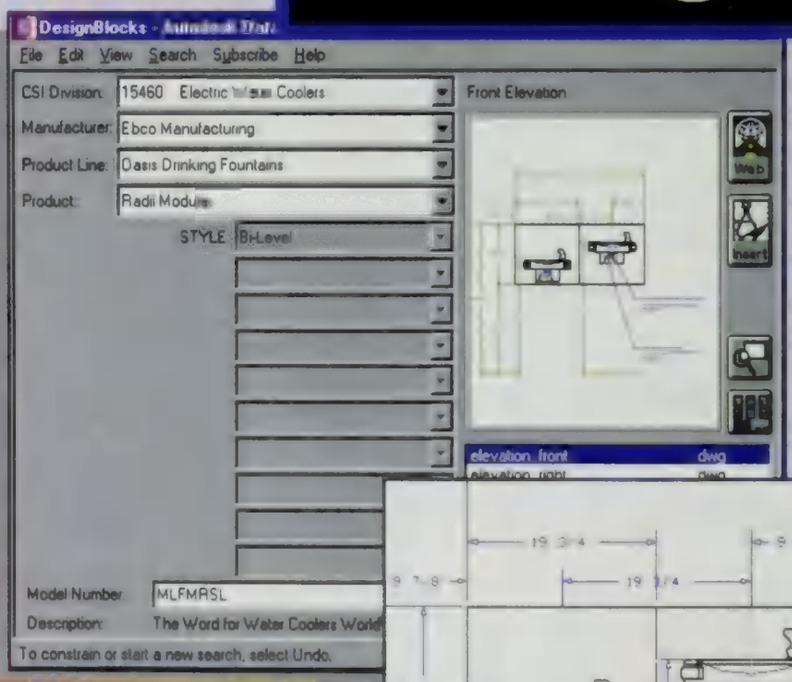


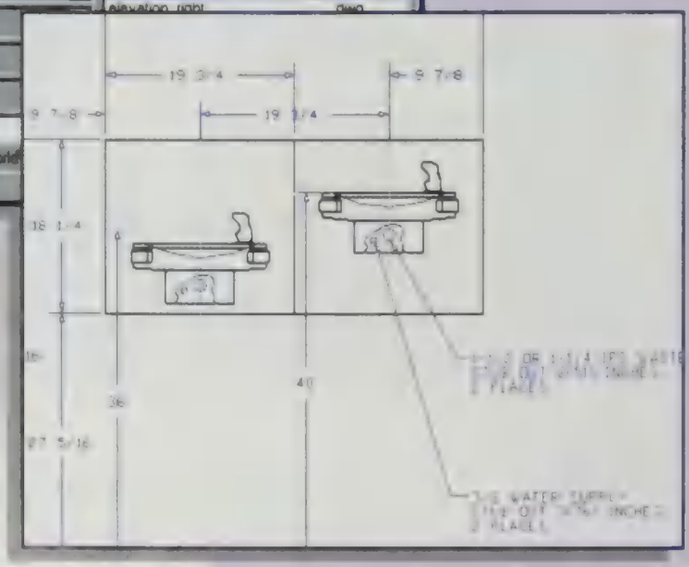
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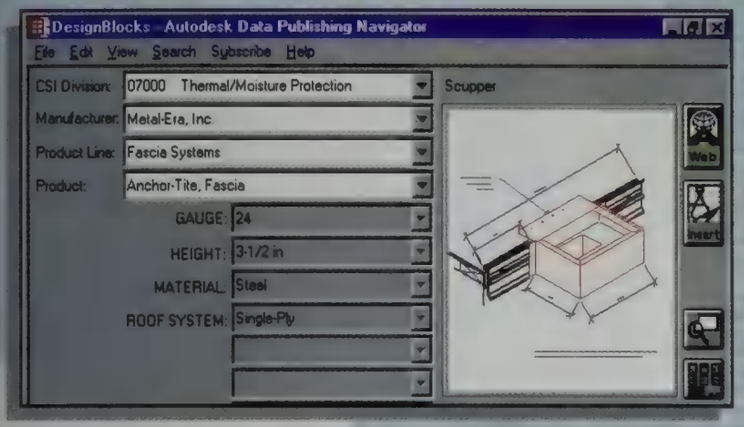
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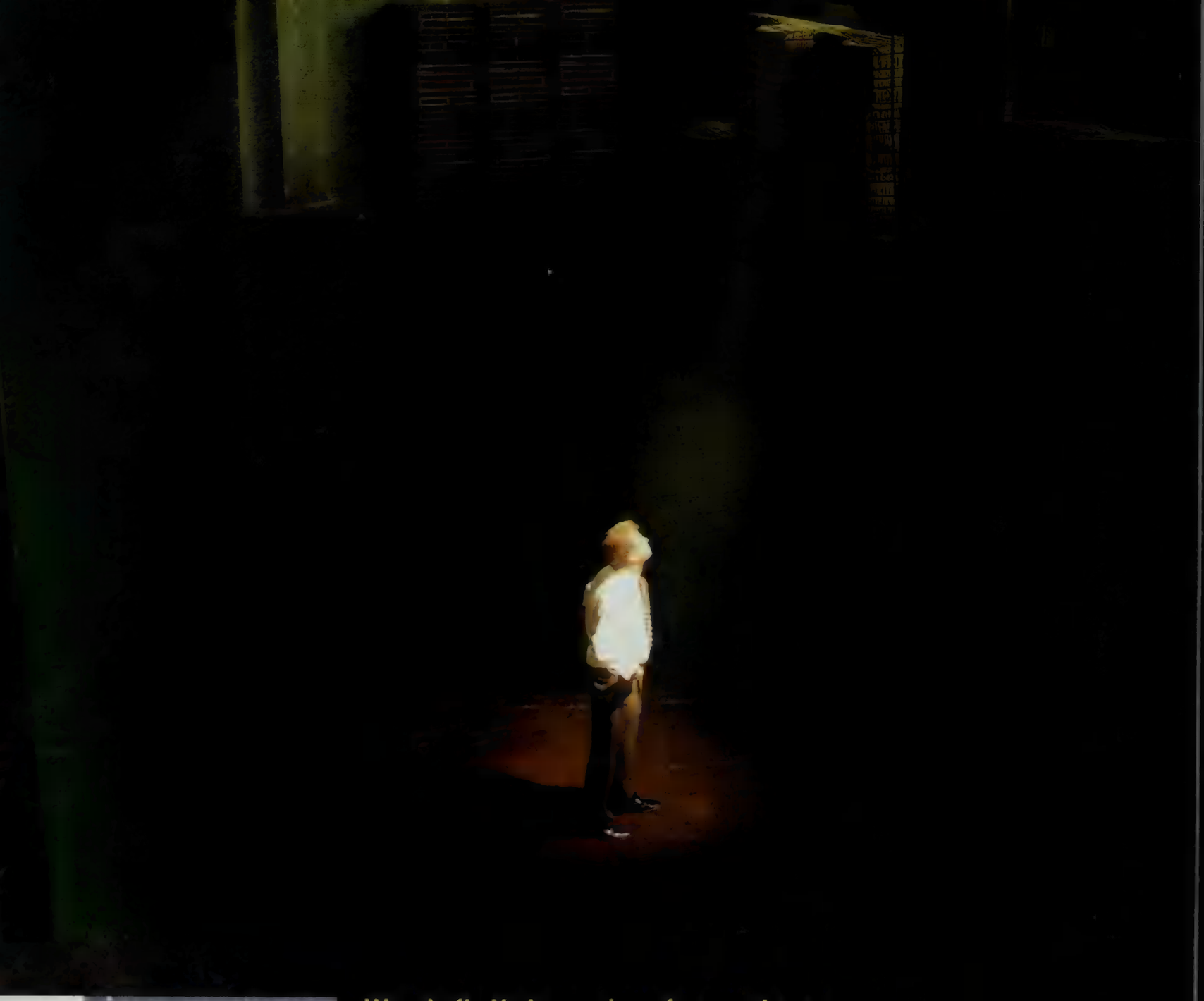
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CIRCLE 68 ON INQUIRY CARD

NEW PRODUCTS

New Products this month covers roofing systems particularly appropriate for renovation. A new roof gives the architect a chance to correct design flaws, such as depressions from uneven building settlement that allow water to pond, and insufficient insulation. A new roof profile or material can completely change the appearance of the building, creating a more attractive and competitive facility. Re-roof systems covered this month are not necessarily new, but each has a particular advantage in specific situations. Literature pages also cover roofing in a renovation context. And the Product Briefs page includes a "new" 58-year-old Frank Lloyd Wright table and a door handle with raptor overtones.

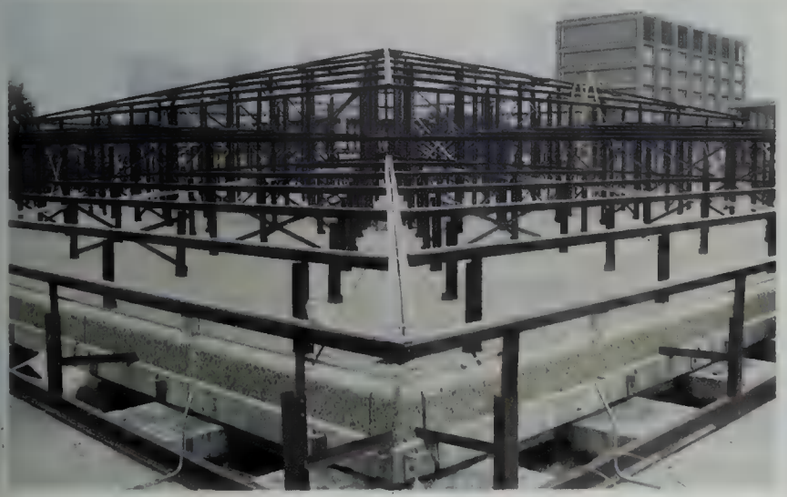
—Joan F. Blatterman, New Products Editor

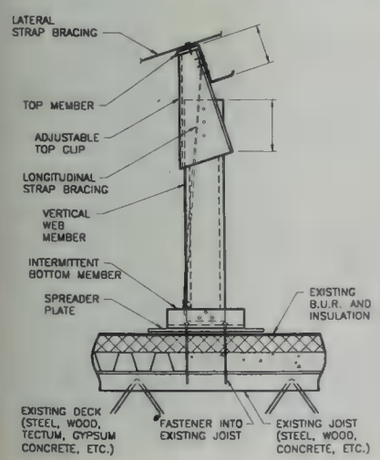
ADJUSTABLE FRAMING SYSTEM PUTS A NEW ROOF OVER OLD

The Cura System is a labor-saving way of putting a new, sloped roof over an existing flat or odd-shaped roof. Light-gauge steel framing, galvanized or red-oxide painted, is factory-cut to the exact length required by the design, slope, and loading criteria specified by the architect, and shipped to the site ready to erect. The system's unique feature is a clip assembly that lets the installer precisely adjust individual members to suit minor roof-field irregularities and to maintain the slope and alignment needed by the new roof. Framing can produce slopes from 1/4:12 to 12:12 or greater. Though the Cura framing is most commonly used for metal-panel roofs, the system will support other roof types.

The designer must verify the condition and capacity of the existing roof structure and insulation. To prevent buildup of damaging condensation in the void between old and new roof, sufficient ventilation should be included in the new roof design via eave and ridge vents or louvers. The Cura System can meet high-wind and other performance standards specified, such as ASTM E 1592-94.

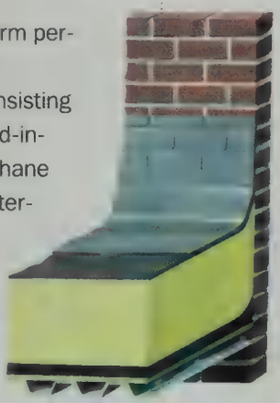
Working from a copy of the existing roof plan (especially useful are as-builts that illustrate the spacing, direction, and type of the underlying structure), the new roof profile sketched by the architect is translated into CAD. After drawings and details are approved by the designer, the necessary steel supports, joists, and cross bracings are cut and shipped, along with construction drawings to guide the roof contractor in correct assembly. Cura framing attaches to the bar-joist, concrete-deck, or similar underlying structure of the building, using intermittent or continuous sill members as needed to reduce point loads. When roofed with metal panels, the total dead load of an installed Cura system is less than 3 lbs per sq ft. [Daniel P. Coffey & Associates was the architect for the roof project shown.] 800/280-2872. ReRoof America, Inc., Tulsa. **CIRCLE 201**





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(Continued on page 190)



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▼ "Wood-grained" steel door

GrainTech is a new option for fire-rated steel doors. Panels are embossed in a grain pattern and primed to accept realistic wood-stain colors (mahogany shown). 513/745-6400. Steelcraft/Ingersoll-Rand Co., Cincinnati. **CIRCLE 203**







▲ Laminated/metal

For interior use, decorative metal sheets are now available with a phenolic backer, an option said to make panels easier to fabricate and to add rigidity when needed for specific architectural applications. Mettle Mica patterns (top) are solid anodized aluminum; abstract Vortex designs (above) replicate the look of wrought iron, pewter, slate, and oxidized metals in solid brass, copper, or aluminum. Sample kit offered. 800/628-9346. The October Co., Easthampton, Mass. **CIRCLE 204**



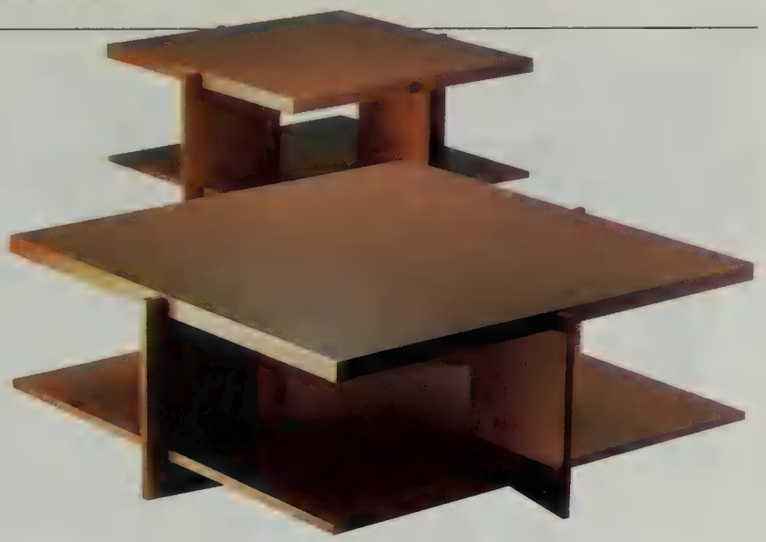
◄ Exterior millwork

Classic architectural pediments, pilasters, arches, sunbursts, and other decorative window and door treatments are made of high-density urethane to resemble white pine. A catalog shows all designs, available in a two-week lead time. 800/367-1076. Life-Time Preformed Millwork, Eighty-Four, Pa. **CIRCLE 205**



◄ Innovative retail display

A custom retail display designed for Brandywine Sports by architect Tony Horton and store designer James Madden is based on a 9-by 22-ft vintage baseball photo blowup reproduced on Surface System modules. Made of individual 24-in. panels that can follow the curve of the wall, the wall treatment is mounted on a metal grid that can receive merchandising accessories such as clothing racks. 216/343-6621. Marlite, Dover, Ohio. **CIRCLE 207**



▼ Striking entrance hardware

New solid-metal Talon pulls come in 12- and 8 1/2-in. lengths for System C mounting on wood, metal, and glass doors. The new design is particularly dramatic installed in different sizes back-to-back on a glass door (below). Bronze and stainless-steel cabinet hardware is also offered in Talon styling, with drawer and finger pulls echoing the distinctive shape. Doorpulls can be specified in five bronze-finish options. 800/451-0410. Forms + Surfaces, Carpinteria, Calif. **CIRCLE 206**

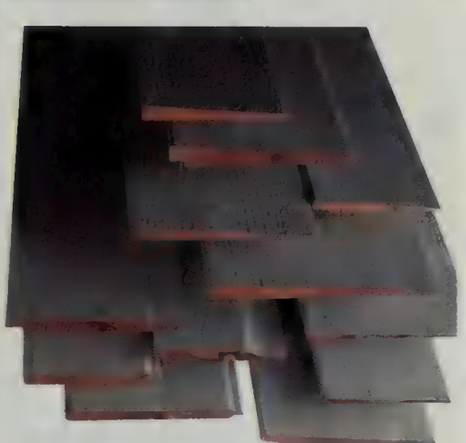


▲ Wright coffee table

The latest furniture reproduced under license from the Frank Lloyd Wright Foundation includes low cherry-wood tables, replicas of pieces designed originally for the Lloyd Lewis house in Libertyville, Ill. (1939-1942). There are two sizes, 35- and 45-in. square, both 16-in. high. Shown in natural cherry, the Lewis table can also be ordered stained walnut or black. Prices start at $1,650. 516/423-4560. Cassina USA, Inc., Huntington Station, N.Y. **CIRCLE 208**

▼ Pre-primed cedar siding

StepSaver is tight-knot solid red cedar that comes factory primed front and back, and on top and bottom edges. Intended as a competitively priced, low-maintenance residential exterior, the siding is milled in bevel-edge, channel, and tongue and groove profiles. Four-side priming is said to stabilize the wood and greatly extend its long-term performance and good appearance. If StepSaver siding is painted on site with Olympic/PPG's latex, the mill and paint manufacturer will guarantee the finish for 15 years. 360/352-7633. Skookum Lumber Co., Olympia, Wash. **CIRCLE 209** ■



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photo: Jack E. Boucher/HABS

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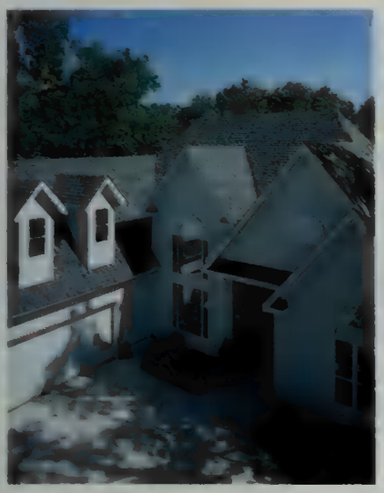
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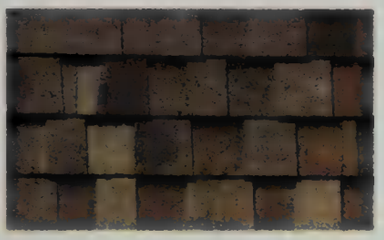
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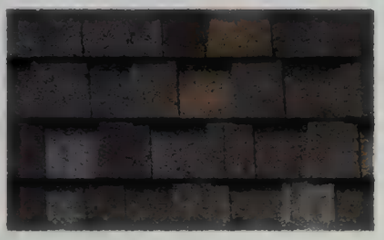
LAMINATED SHINGLES HAVE A REALISTICWOOD-SHAKE APPEARANCE

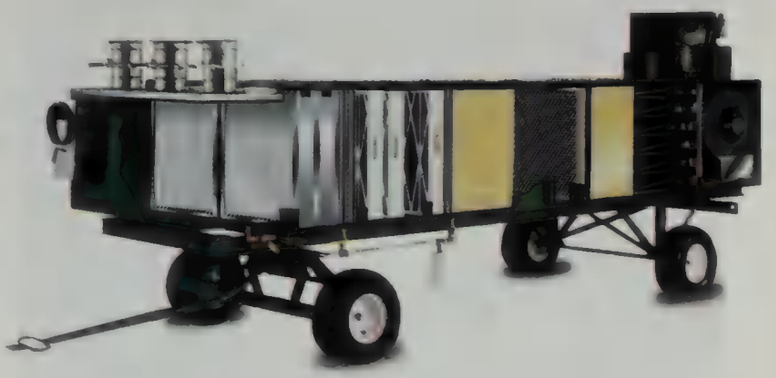
For new residential construction or as an upgrade to an existing three-tab roof, Tamko's Heritage laminated-fiberglass shingles come in three weights, all meeting UL wind-resistance and Class A fire standards. The heaviest, M40, comes with a 40-year guarantee. Made to replicate the look of wood shakes, shingles are colored with surface granules blended in natural-istic shadings of gray, green, gold, and brown.

Three of the newest American Heritage colors are shown here: Thunderstorm Grey, installed on the home (left), Harvest Gold (top) and Autumn Brown (bottom). 800/641-4691. Tamko Roofing Products, Joplin, Mo. CIRCLE 210









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Though coal tar and asphaltic roofing materials fall within permissible VOC limits during most roofing installations, these bituminous compounds produce a characteristic intense odor in the hot, molten state needed for correct application. These objectionable smells have precluded designers from specifying such roof materials where occupants of structures being renovated must not be disturbed. Mobile FRS-6000 (fume recovery system) equipment (above) was developed to capture and systematically filter these fumes and smoke to "nearly undetectable" levels. The manufacturers claim that the FRS will permit roofing during business hours, even at the most sensitive locations like schools and hospitals. Positioned next to the hot-tar tanker or kettle, the equipment diverts and cleans fumes before they become irritants. 800/468-9629. Koppers Industries, Inc., Pittsburgh. CIRCLE 211

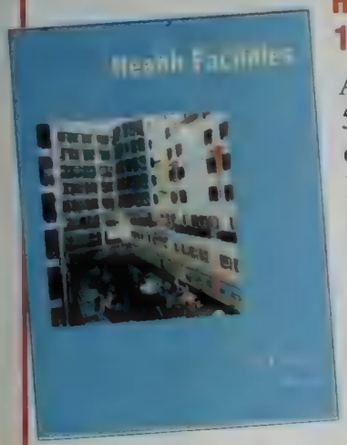
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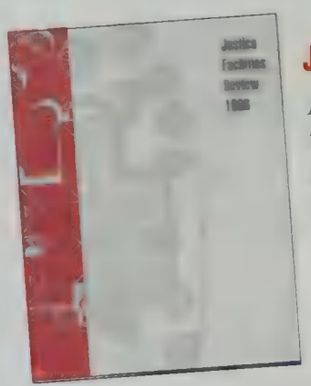




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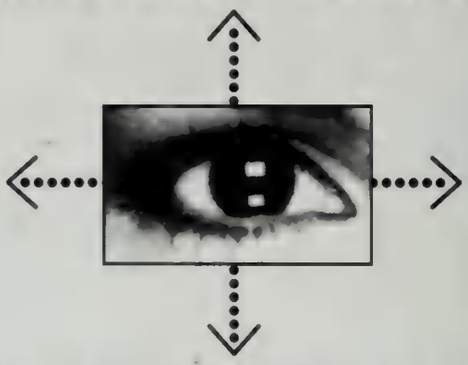


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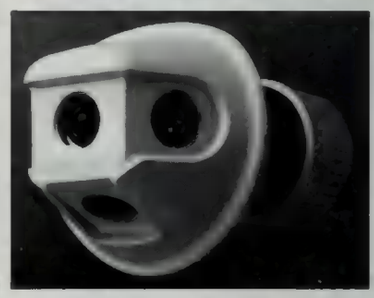
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PRODUCT LITERATURE

Coal-tar roofing applications

A four-page technical brief, *The Chemistry of Roofing Materials* explains how the molecular structure of coal tar produces a roof said to have superior resistance to UV, moisture, and temperature cycling over time. Text and illustrations describe and compare the major classes of organic roofing materials—pitch, asphalt, modified bitumen, and elastomeric rubbers—and examine the mechanisms by which roofing membranes eventually deteriorate under the influences of the "four enemies:" UV, oxidation, water, and chemicals. Coal tar is described as achieving an "impermeable" water-proof roof even under dead-level conditions. 800/221-6490. Allied Signal Commercial, Cary, N.C. **CIRCLE 212**

Metal-roof capability

A four-page brochure highlights various H.H. Robertson, Smith, and Steelite systems that are now joined to create the Centria roofing-product line. Detail drawings illustrate both architectural and structural roofing panels; all seam-profile options are shown. 412/299-8000. Centria, Moon Township, Pa. **CIRCLE 213**

20-year membrane

A hot-air-welded single-ply system, the SR80/20 roof is 80-mils thick, and approved installations are backed by a 20-year performance warranty. Made with a polyester-reinforced thermoplastic sheet, the roof meets all applicable UL, FM, and model-building code weathering, wind-uplift, and fire-resistance standards. 800/457-6634. HPG Roofing Systems, Somerset, N.J. **CIRCLE 214**

Single-ply over metal retrofit

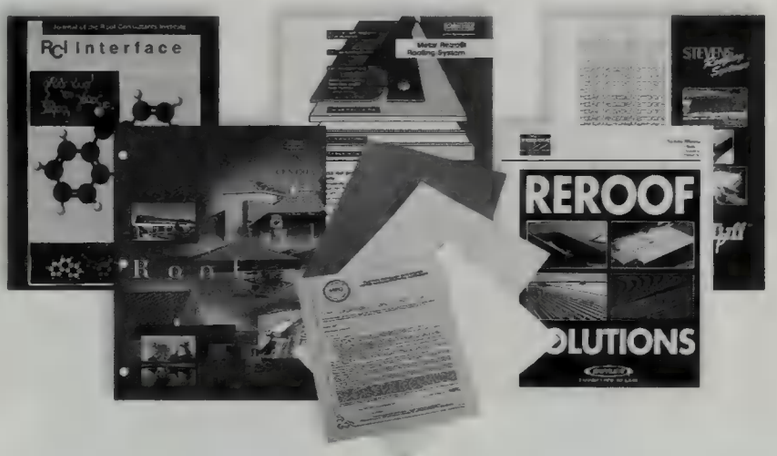
Carlisle offers a polyester-reinforced membrane system specifically for use over failing metal roofs. A proprietary fastener is said to attach the sheet to structural purlins without compromising wind- or weather-resistance. The metal retrofit system may be specified in either black Sure-Seal or white Brite-Ply membranes. 717/245-7000. Carlisle SynTec Inc., Carlisle, Pa. **CIRCLE 215**

Reroofing with metal panels

A short-form catalog includes before-and-after photos that illustrate the dramatic appearance difference produced by placing a new metal-panel roof on an existing low-slope structure. A project-specific, life-cycle analysis can incorporate maintenance costs, useful roof life, cost of capital, tax rates, energy savings, and inflation, letting the designer compare retrofit systems with differing initial costs. 800/998-7663. Butler Mfg. Co., Kansas City, Mo. **CIRCLE 216**

TPO roofing system

A comprehensive architectural brochure details application, installation, and physical-performance information about energy-efficient white Hi/Tuff roofing. This tear- and puncture-resistant material is described as "competitively priced." Also available: a new guide to Factory Mutual (FM) windstorm classifications, detailing approved fastener patterns that qualify for ratings as high as FM-1-120. Call 800/621-ROOF, x1079. JPS Elastomerics, Holyoke, Mass. **CIRCLE 217** ■



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DATES EVENTS BOOKS

Calendar

Through February 16
Metropolitan Museum of Art
New York City
The career of Charles Rennie Mackintosh, with 250 works that include photos and drawings of his buildings, furniture, textiles, and the reassembled Ladies' Luncheon Room from Miss Cranston's Ingram Street Tea Rooms. Call 212/535-7710.

Through February 23
National Building Museum
Washington, D.C.
"An American Embassy in Berlin" examines the recent competition for the American Embassy in the German capital. Models and drawings by the six competitors as well as the winners, Moore Ruble Yudell and Gruen Associates, are shown. Call 202/272-2448 or fax 202/272-2564.

March 6-8
Westin Tabor Center
Denver, Colorado
Six PIAs (Professional Interest Areas) and the AIA risk-management committee are cosponsoring a conference, "The Client Connection". It is endorsed by the AIA Denver, AIA Colorado, and the AIA Denver Design/Build Committee. The conference will focus on ways architects can better serve their clients, offering more than 30 seminars, workshops, and programs on design-build, construction and risk management, alternative futures in the profession, and information technology and communications. For information, call 202/626-7482.

March 19-20
Los Angeles Design Center
WestWeek 97 will celebrate European furniture and interior design with major sponsors and keynote speakers from Italy, France, and Spain. Call Bret Parsons at 310/657-0800, extension 240 or fax 310/652-8576 for information.

April 4-6
Washington, D.C.
The National Solar Energy Society will present a collaborative conference with several organizations, including the AIA. The program covers sustainability, viability, and the prosperity of renewable and solar-energy technologies. Presentations will include alternative building systems, daylighting design tools, and building case studies. AIA Learning Units can be earned. Contact the AIA Professional Interest Area information line at 800/242-3837.

April 4-6
Asilomar Conference Center
Pacific Grove, California
The AIA California Council will hold its 13th Monterey Design Conference, called "1,000 Days: Designing the Future" after the fact that the event will fall within 1,000 days of the year 2000. An international group will address the issues. Concurrent sessions held by practicing California architects will demonstrate their creative solutions to the social issues that confront our evolving society. For more information, call Traci Bockes at 916/448-9082.

Competitions

First annual **Business Week/Architectural Record Awards,** sponsored by the American Institute of Architects, will recognize achievement in creative management practices and design solutions. The deadline for registration is March 17, and for entries, April 18. Categories include design that supports alternative work practices and increased productivity; design that boosts a new corporate image or changing corporate culture; and design that supports corporate or institutional innovation, industrial practices, and new work tools. Winners will be featured in both publications. *Business Week* is read by some six million people, many of them potential clients. To enter, call 888/242-4240 or visit the Web site at www.aia.org. Entries will be received at the AIA in Washington, D. C.

The fourth annual **Computer Delineation Award,** sponsored by ARCHITECTURAL RECORD and five systems companies, will honor originality in computer-generated drawings, renderings, or electronic models in two categories: images and electronic animation. Entries are due by February 26. Prizes include CAD tools worth up to $4,095. There is a $15 entry fee. For more information, see advertisement, this issue, fax 212/512-4256, or E-mail jarussel@mcgraw-hill.com.

The Architectural League of New York announces a February 28 deadline for application for the **Deborah J. Norden Fund Grant** for study and travel. Students and recent graduates in architecture, architectural history, and urban studies are eligible to apply. For information, call the League at 212/753-1722.

AIA/Portland has issued a call for entries in its awards program, **Architecture + Energy: Building Excellence in the Northwest.** Recognition will be given for design excellence in buildings that integrate energy-efficient technology. The program is open to non-residential buildings in Idaho, Montana, Oregon, and Washington State. Sponsors are Portland General Electric and the Bonneville Power Administration. The deadline is May 30. To request an entry packet, contact AIA/Portland, 315 S.W. Fourth Avenue, Portland, Oregon 97204 or call 503/223-8757.

Registration to design the **Oklahoma City Memorial** is due by February 10. The new structure will stand on the site of the worst terrorist attack on U.S. soil—the bombing of the Alfred P. Murrah Federal Building on April 19, 1995. Also included in the brief is a visitors center, which may be housed in an adjacent existing building. To register, send a letter requesting competition materials and a check for $25 to International Design Competition, Oklahoma City Memorial Foundation, 420 North Robinson Avenue, Oklahoma City, Oklahoma 73102. For information call 405/748-0515 or 800/491-3822.

Entries for the 1997 **DuPont Benedictus Awards** for Innovation in Architectural Laminated Glass are due March 3. The competition is sponsored by DuPont, the AIA, and the Association of Collegiate Schools of Architecture, and is supported by the International Union of Architects. This year's jury is comprised of Hugh Newell Jacobson, FAIA; Patricia Patkau, RAIC; and Christian de Portzamparc. Winners from around the world who demonstrate "significant" uses of laminated glass will be announced at the AIA Convention in New Orleans, May 16-18. For information, write Joanna Hanes-Lahr, 1100 New York Avenue, N.W., Washington, D.C. 20005; call 202/393-5247; or E-mail to hanes-lahr@mcimail.com.

The Village of Plainfield, Illinois together with Plainfield Partners Commercial, Ltd., and the township Park District *(continued on page 196)*

are holding a one-stage competition for the design of a new 300-acre **Plainfield Town Center** to be located directly across the DuPage River from the historic downtown. Registration costs $90 and closes March 30. Entries are due May 1. Prizes are $10,000, first, $5,000, second, and $2,500, third. To register, send check or money order to Plainfield Design Competition, Village of Plainfield, 32145 West Lincoln Highway, Plainfield, Illinois 60544. For information, call 815/436-7093.

Entries are due on April 1 in the one-stage International Design Competition for the **Development of David's Island,** located in Long Island Sound. The sponsor is the College of New Rochelle. Registration before January 15 costs $35 and $50 thereafter. Jurors include Diana Agrest, Diana Balmori, Deborah Dietsch, Laurie Hawkinson, Michael Manfredi, and Bradford Perkins. Prizes totaling $5,000 will be distributed among the winners, whose entries will be exhibited at the New Rochelle Castle Gallery. For a competition brief, call the gallery at 914/654-5423.

Reviews

A Critic Writes: Essays By Reyner Banham
Selected by Mary Banham, Paul Barker, Sutherland Lyall, and Cedric Price. Berkeley: University of California Press, 1997, 351 pages, $40.

Reviewed by Thomas Leslie

Reyner Banham was best known for his seminal history of Modernism, *Theory and Design in the First Machine Age* (1960), a carefully argued survey of the relationship between 20th-century architecture and the technology surrounding it. He also wrote a series of brilliantly crafted books before his death in 1988, covering topics as diverse as the history of hvac (*The Architecture of the Well Tempered Environment*, 1969), the industrial landmarks of Buffalo, N.Y. and their relationship to European Modernism (*A Concrete Atlantis*, 1986), and a poetic ode to the American West (*Scenes In America Deserta*, 1982).

The reader of his books will discover a restless but precise mind, interested in buildings, objects, and systems both for what they are and what they represent. His books alone define him as one of the most pertinent observers of both 20th-century technology and architecture.

But Banham was undoubtedly at his best when writing short essays, which showcase his wry wit and love of language. From 1965 on, he was a regular contributor to the British journal *New Society*, a rare pulpit for a design critic to occupy.

Until the publication of *A Critic Writes*, only a few of Banham's short essays were available in collected form (in *Design By Choice*, 1981). It's great to find in one place some of the most incisive, witty, and even outrageous examples of architectural thought.

Banham's widow Mary, along with Paul Barker, Sutherland Lyall, and Cedric Price have done an excellent job of highlighting the critic's bibliography. Banham could range from insightful historian (for example, in an essay on the Greene brothers' Gamble House), to eccentric chronicler of the mundane (in a classic 1965 essay on "The Great Gizmo"), to self-appointed gadfly and spokesman for the man in the street (in "The Crisp at the Crossroads," a stocktaking on the status of the potato chip, written in 1970). All facets of this extraordinary mind are represented here.

Reading this collection, one senses Banham's grasp on the practice of architecture was broad enough to *(continued on page 197)*



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For Additional Classified - See Pages 210 & 211

(continued from page 196) understand that design extended beyond the typical critic's world. Indeed, the traditional essay on a single building is barely represented in this book. Instead, Banham's writing is valuable for its ability to expand our architectural horizons, allowing us to learn from the detritus of daily life. He was at times obsessed with both automobiles and aircraft, and was comfortable treating both as essentially architectural exercises.

Banham's breadth was such that there are inevitable gaps in this book. "A House is Not a Home," a 1965 essay on the growing mobility of domestic environments, for example, is glaring in its absence. Likewise, his prescient 1955 essay, "The Machine Aesthetic," which laid out the arguments for Postmodernism 20 years before its time, is not to be found here.

Banham's final essay, published after his death, though, is included in this book and deserves to be read by the entire architectural profession. Entitled "A Black Box: The Secret Profession of Architecture," it was a swan song that combined many of his deepest passions and most heartfelt messages—that architecture was a narrow slice of the world at large, that architects are chronically unable to see their work in a larger perspective, that the public deserves more than it often gets from us. Such unflinching criticism of a profession that Banham obviously loved dearly is a constant theme in this thought-provoking collection.

Omissions and Corrections

The map of the Grand Rapids area [RECORD, December 1996, page 29] should have been credited to Dennis McClendon/Chicago Cartographics. RECORD regrets the omission.

Credits for the Swatch Pavilion [RECORD LIGHTING, December 1996, pages 18-21] should have included the architectural collaboration of Eyecandy and exhibit-design consultants Eight, Inc.

Design credit for A Contemporary Theater [RECORD, December 1996, page 16] should have read Callison Architecture.

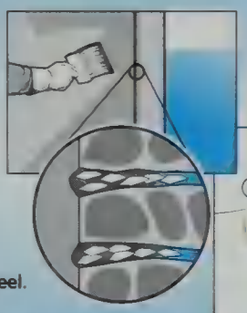
Anderson/Schwartz should have been credited as co-winner of the 1992 competition to design the Whitehall Ferry Terminal [RECORD, January 1997, page 45].

The dates for WestWeek [RECORD, January 1997, page 207] have been changed to March 19-20 and the new contact is Bret Parsons.

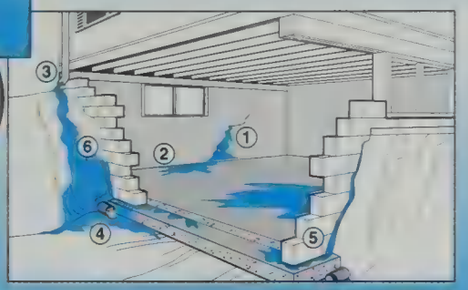
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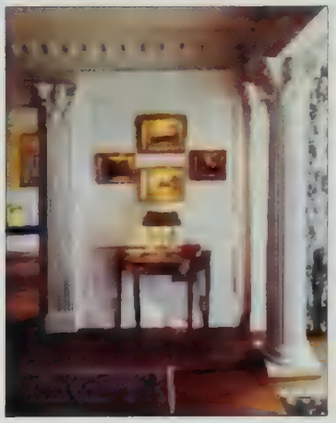
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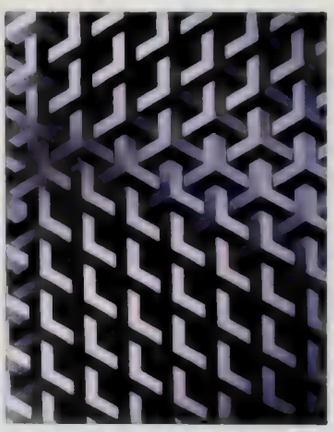


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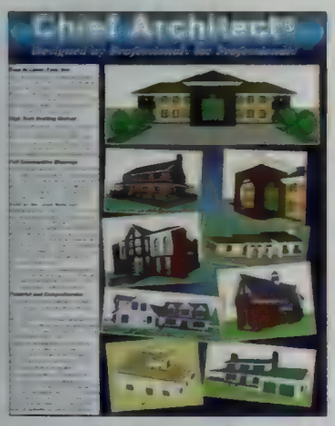


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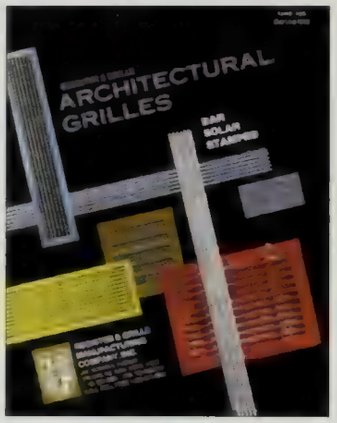


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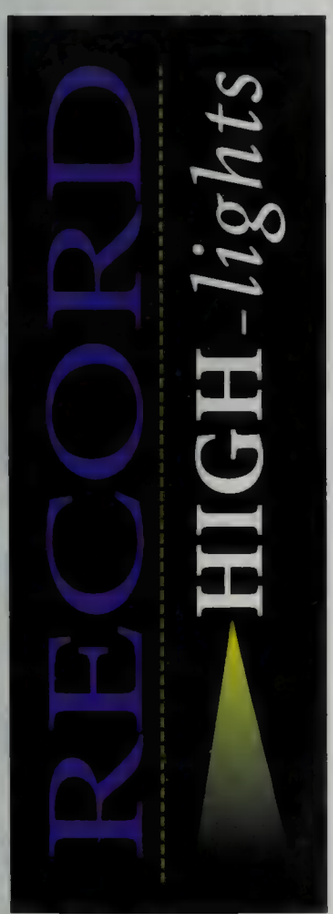
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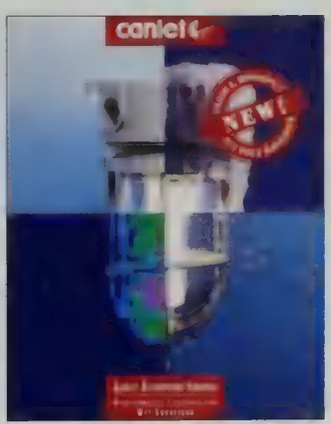
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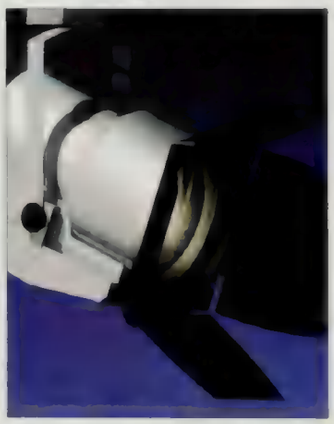


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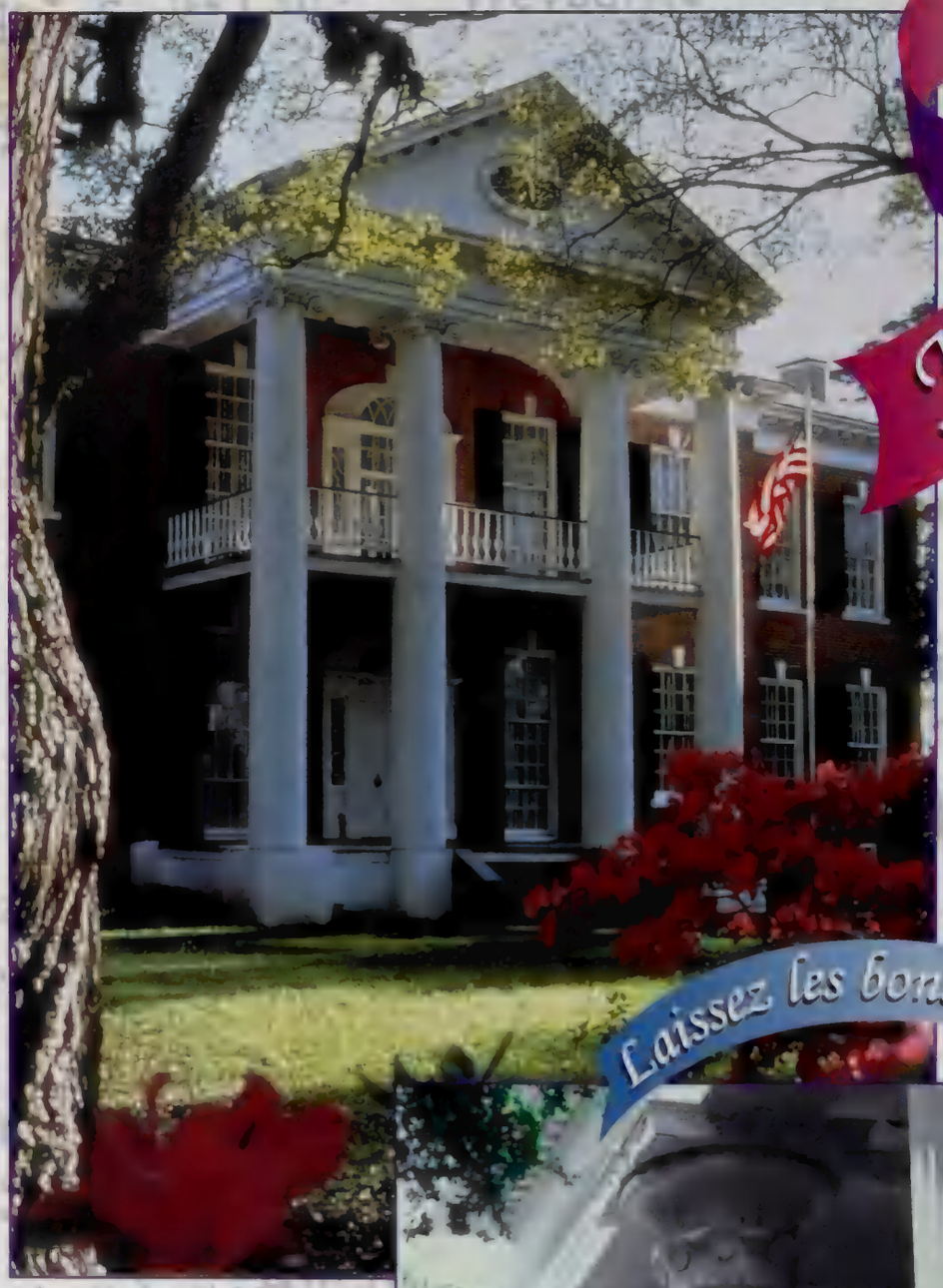
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Questions:

1. What are three benefits of a "self-healing ring" WAN system?
Answer 1.

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4. When is wireless technology worth considering for telecommunication needs, and what are some of its design implications?
Answer 4.

5. Describe the issues related to access flooring as a distribution method.
Answer 5.

6. What should designers keep in mind concerning today's high-grade cables?
Answer 6.

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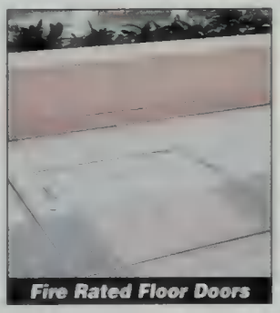


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AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

Telecommunications Infrastructure; questions on page 214.
To receive CES Credits, fill in Self-Report Form

Answers:

1. This design helps minimize network disruption from system failures, offers flexibility, and permits competing telecommunications companies to offer services within the building, lowering prices.

2. a. Architect should provide at least two service entries into the building for wire connections; **b.** include multiple risers where rings extend from floor to floor; and **c.** leave space for multiple WAN systems' equipment in telecom closets and service-entrance conduit banks.

3. 1996 TSB-75 minimizes rewiring when office layouts change or personnel change. It is well-suited to access-floors, but these have higher initial costs. Mounting multi-user boxes to columns or walls is usually undesirable because it may leave wiring exposed. System administration, troubleshooting, and maintenance are more complex, and system-transmission capacity may be less than that of conventional methods, limiting future improvements when greater bandwidth capacity is needed.

4. A wireless approach is best suited for building types whose users require high portability and mobility and have a relatively low data demand. This technology requires antennas with associated wire pathways in ceilings and materials that won't hinder radio transmission. In addition, architects may have to design for antennas outside of buildings, five or six stories up. A wireless approach may suit historic preservation and adaptive-re-use projects, particularly in buildings where long wire runs would otherwise be required.

5. Major improvements in access flooring and cabling have resulted in thinner floor tiles with a more solid feel and significant reductions in depth—now commonly four in. Access-floor voids are being used for cable distribution and air ventilation. Underfloor ventilation can be used in conjunction with ceiling-panel radiant heating and cooling systems. Access floors cost more than other systems and present a range of logistical problems, but they are more flexible than cellular floors or poke-through concepts.

6. High-performance cable is more delicate, requires pathways that accommodate soft bends and multiple access points, and needs pull-boxes at frequent intervals. There are conduit and separation requirements between power cables and fluorescent fixtures. Ceiling- and wall-based distribution concepts may offer the flexibility that most clients need.

7. Many new "smart" devices are being added to buildings, and some will need connections to a building-wide control system, increasing wires, contact points, sensors, and so on.

AIA/CES SELF-REPORT FORM

(Use to report learning units earned for Architectural Record only)

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- ☐ **"Specifying Wood Windows and Doors" (sponsored section provided by the NWWDA, page 121)**
- ☐ **"How Do We Wire the Ever Changing Office?" page 173)**

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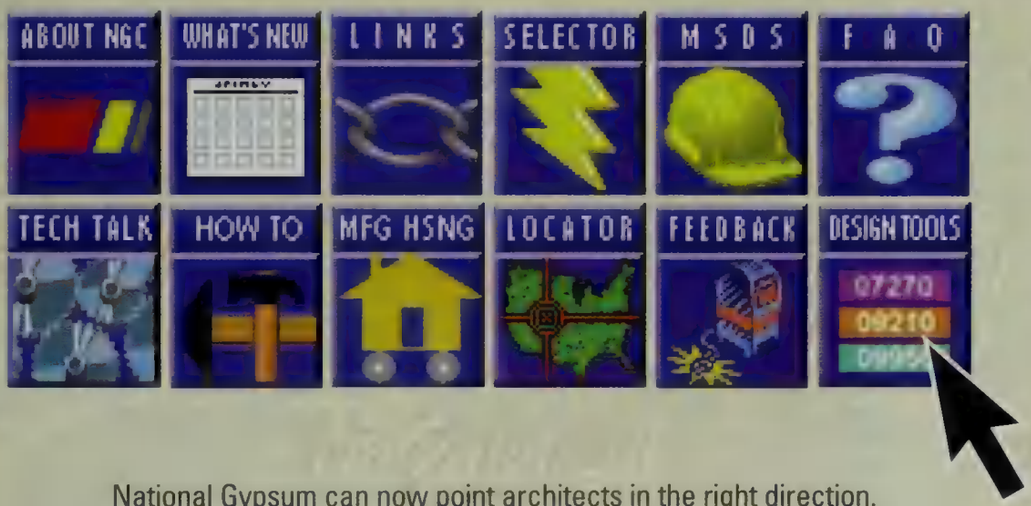
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CIRCLE 85 ON INQUIRY CARD

THE FUTURE: New Ways to Move People Around Really Big Buildings

— JOAN BLATTERMAN

The Future this month looks at how people might circulate across a super-big site or within skyscraping mega-structures, such as the high-rise villages being built in cities like Kuala Lampur, Kobe, and Jakarta. Emerging technologies promise to solve some of the economic and human challenges imposed by travel within the vastness of self-contained cities-within-cities now gleaming in developers' eyes.

The basic structural problems of the ultra-tall building were solved long ago. Frank Lloyd Wright's dream of a mile-high building—his steel-cored Illinois scheme of 1956—is achievable using today's structural components and engineering. But architectural challenges remain, along with programmatic issues FLW never imagined. Twenty-first century design, security, and life-safety concerns prompt a new look at transportation in the context of mega-buildings.

Experts say there is no realistic way to speedily evacuate buildings of over 60 floors. [It took the writer's 20-year-old son about 1 3/4 hours to clamber down the smoky fire stairs from his 100th-floor office when New York's World Trade Center was bombed.] Ultra-tall structures must address life-safety with places of refuge—pressurized, fire-protective areas—which will shield occupants during fire fighting.

Another design constraint: the combined physical and physiological difficulties of ultra-high-speed [illegible] human perception of the [illegible] acceleration— [illegible] limits how quickly [illegible] up to speed in the real world. The fastest elevators now in use, in Japan, move at a rate of 40 ft per second. But it takes about 20 floors to get up to that speed—and 20 floors to decelerate before stopping. That's wasting a lot of shaftway. And the longer the single shaft, the more pronounced the effect of building sway, slowing car speed, and alarming passengers.

Despite its life-safety and people-moving challenges, the super-big building can be seen as environmentally advantageous: a compact, landscape-saving footprint that accommodates the working and living requirements of thousands of people.

So what's up, elevator-wise? A Japanese manufacturer is addressing super-high problems using magnetic levitation to correct for minute deviations in elevator guide rails, preventing any physical discomfort associated with vibration and eliminating all sensation of speed in the car itself.

Switzerland-based Schindler, number two world-wide, proposes that the most coherent solution to high-rise traffic handling is to make it attractive for workers and residents to stay within the building envelope as long as possible (eliminating the mind-boggling difficulties of getting 120,000 people down to the first floor for lunch every day.) Schindler wants to create an intra-building "taxi" system, offering quick communication between different functional zones. This would let a high-rise occupant shuttle from his 18th floor office to an 80th floor apartment, then on to a restaurant on 160, using a series of sky lobbies. Currently in development for a 1998 release, their approach might "let go of the rope," detaching the elevator car from the counterweight. Individual "cars" within shaftways are intended to be self-propelled (no one is saying how yet), permitting stop and start flexibility. Addressing the super-tall structure as a stack of 30-story-high buildings, Schindler aims for a "vertical escalator" that lets people get on and off at will within a zone of "local" floors.

But market-leader Otis is looking at existing technology to make a passenger system that combines vertical and horizontal travel: the sideways elevator. In March, this division of United Technologies will unveil a working prototype called Odyssey. Otis says it will vastly improve the economics of the super-tall building by using hoistway space more efficiently, synchronizing technologies and electronic car-dispatch devices proven safe and effective in moving people around airports and other large areas into an integrated system.

As devised, the Odyssey transport/elevator will let a passenger cab (Otis calls it a Transitor) go from a remote parking garage, traverse the site and enter the building, then rise over 200 stories. Instead of passengers getting out at sky lobbies, then moving to another bank of elevators to take them farther up, the car itself moves over and up. Because this "sideways" capability lets a car get out of the way, several Transistors can use a single shaftway, greatly saving floor space. Assembling the core presents no problem structurally. The dual-shaftway configuration envisioned lets the cars themselves act as counterweights, balancing the system. The architectural program is more interesting, as passengers will find changes from vertical to horizontal and acceleration periods disturbing if they don't know what is about to happen. The prototype will have glass windows that become opaque electronically as the cab leaves ground level and moves vertically.



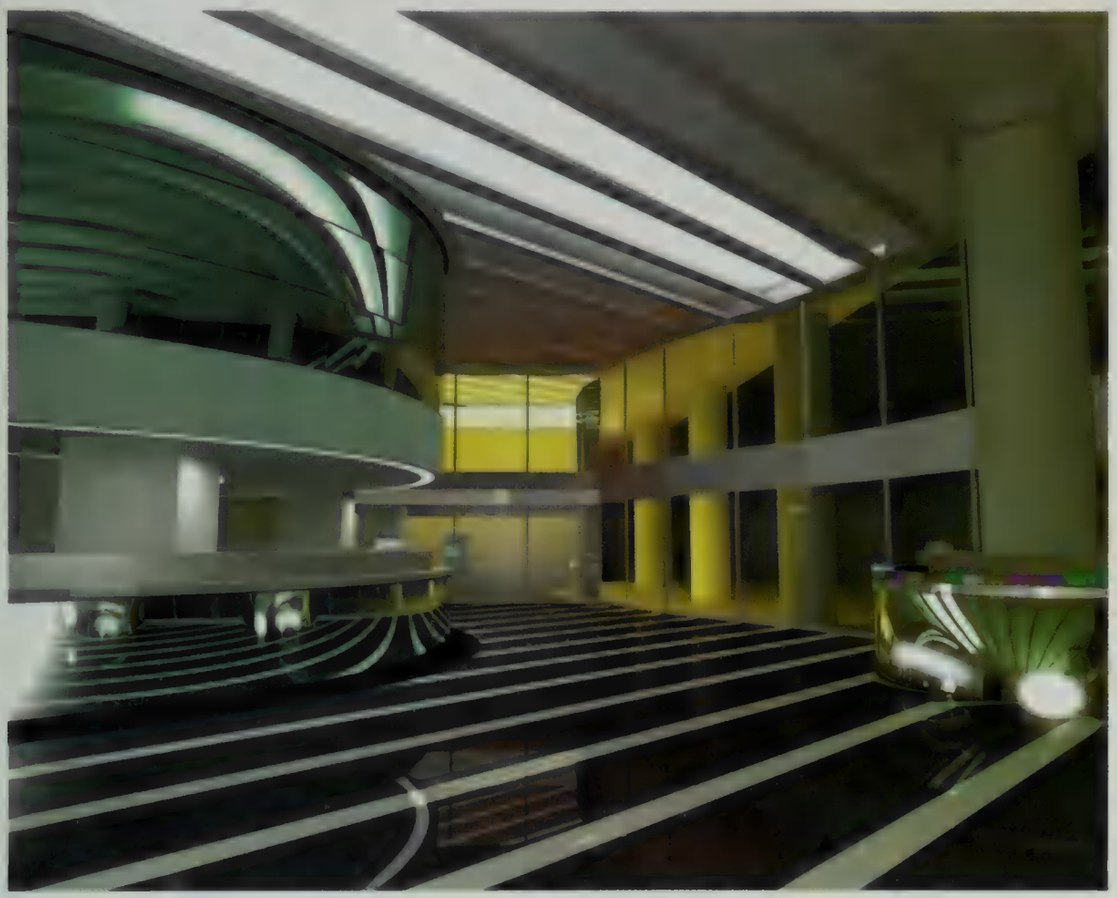
***Transitors* move sideways as well as up and down in the Odyssey system.**

Candidates for Odyssey, Otis says, are buildings of no fewer than 80 stories or that have two sky lobbies; a multiple-use building needing lots of express and local zones; or one with high occupancy and a very large footprint, where users must travel long distances and go to different levels. A 200-floor building would have five travel legs; it will take only 2 1/2 to 3 minutes to go from ground to top. Call 860/676-6000 for a neat, free CD-ROM showing cars in motion, or hit www.otis.com (Web page). ■

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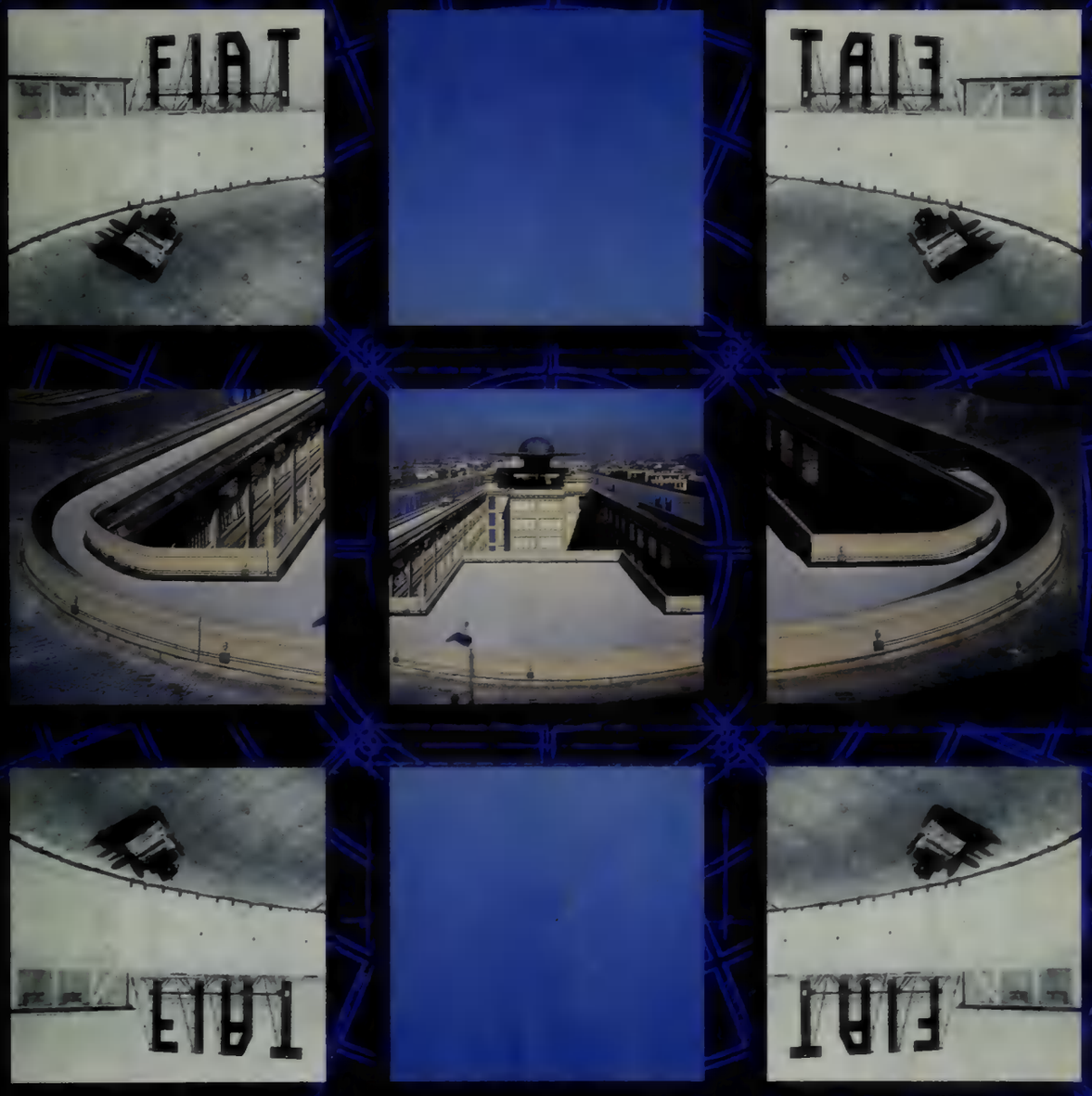
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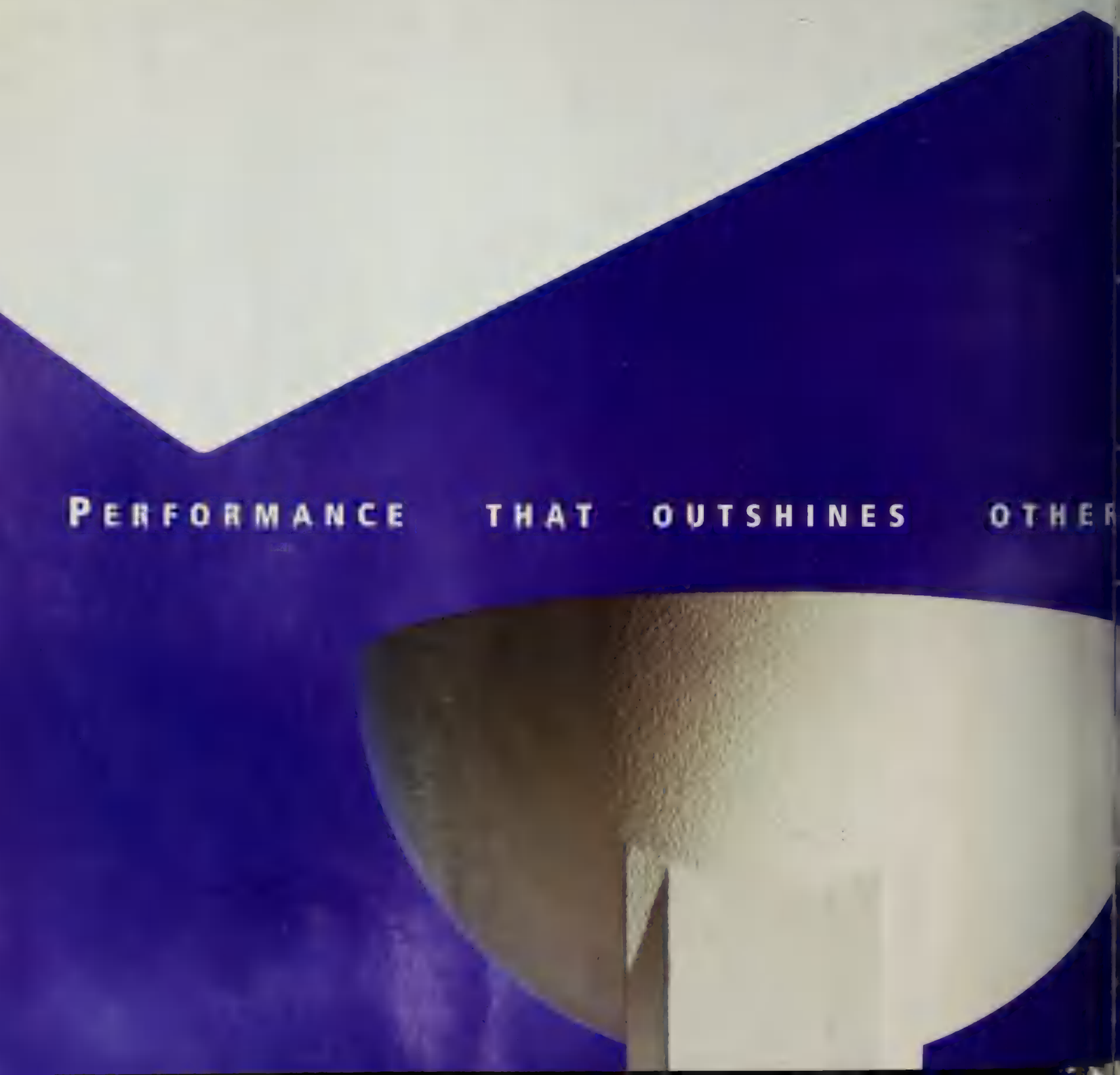
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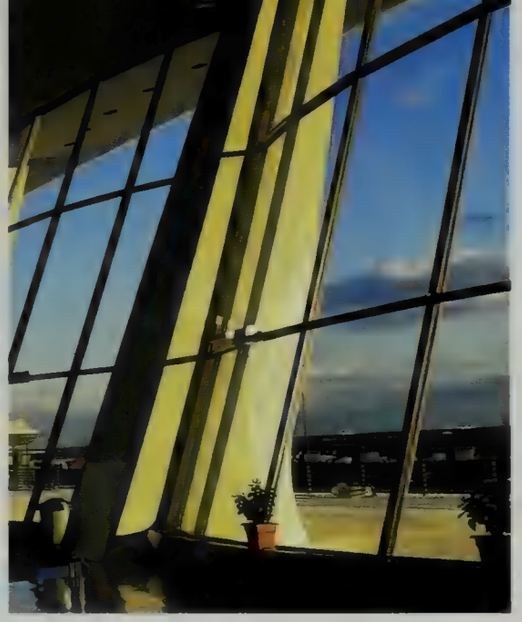
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Above: *Dulles International Airport, Washington, D.C., Skidmore, Owings & Merrill, photo: © R. Latoff*

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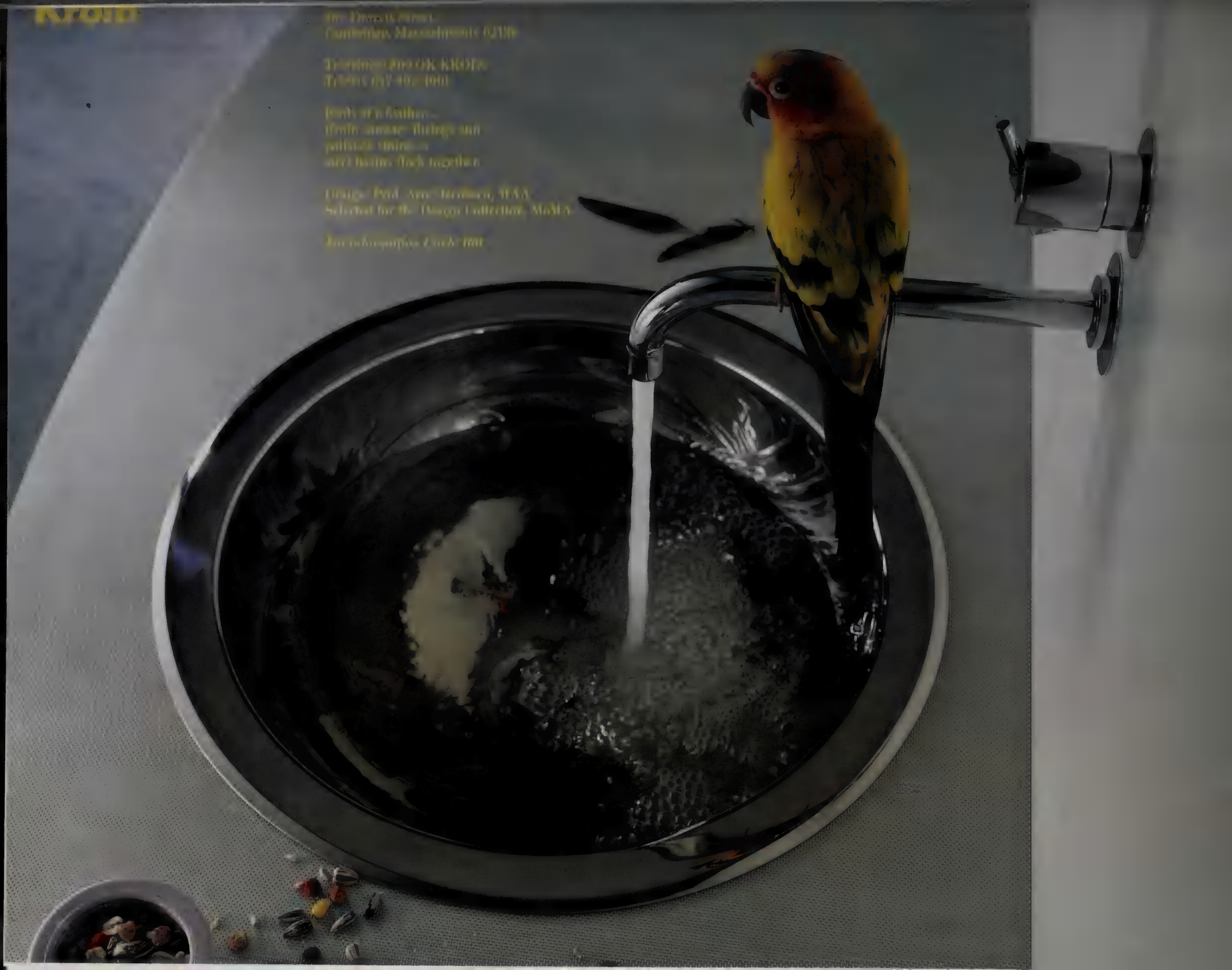
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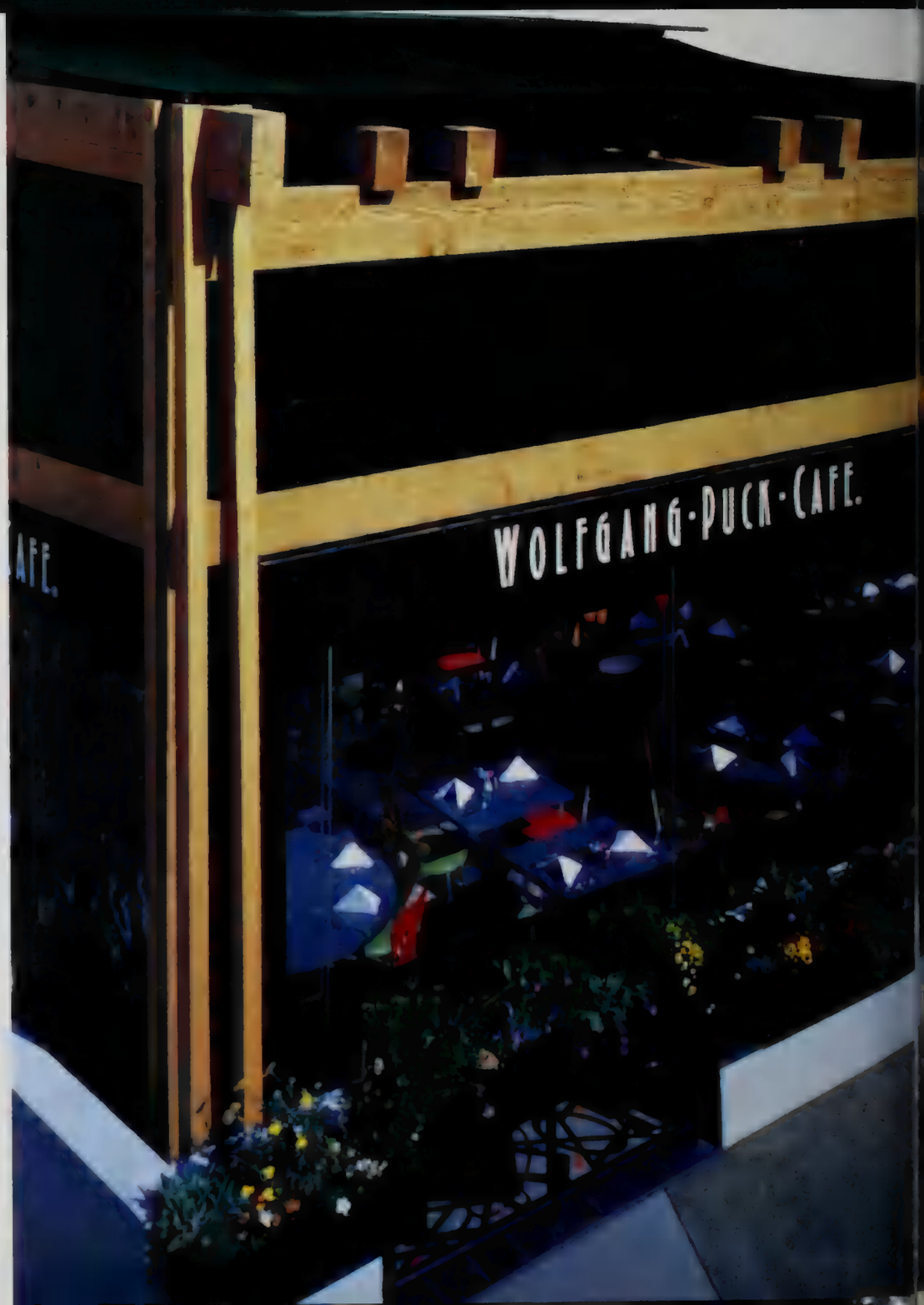


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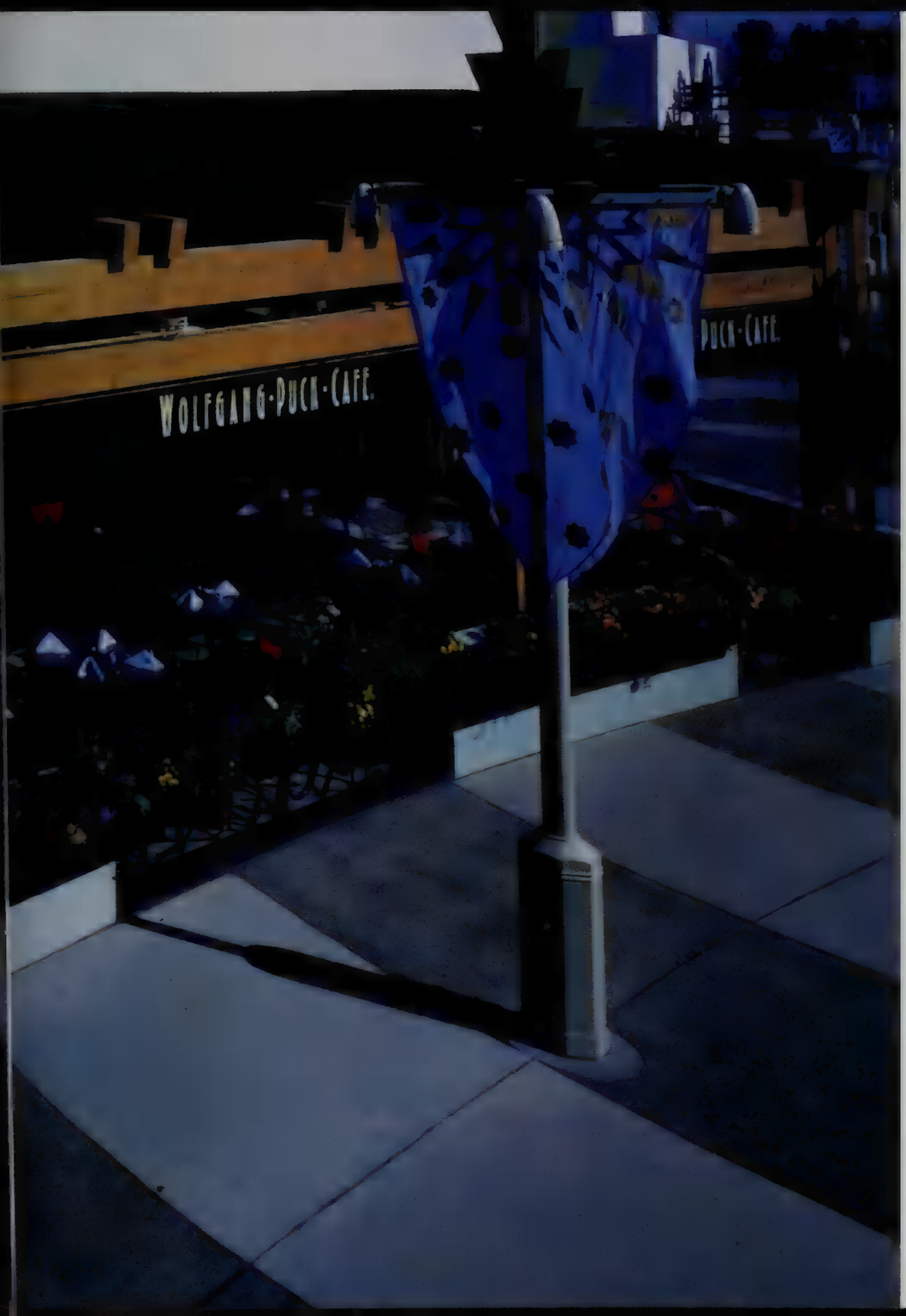
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EDITORIAL:
Words Count

BY ROBERT A. IVY, FAIA

Some people say that architects don't read, but I don't agree. Like most generalizations, this cliché may sound accurate, but probe and you will find that architects read what they care about. Architects simply read in different ways, from a variety of media: print publications, drawings, models, photographs, and 3-D/computer imagery are among their information sources. Although members of the profession are cognizant of contemporary issues and often fiercely committed to ideas, their time available for reading is limited. In order to gain their attention, the words placed before them must count.

Writing and architecture have dominated my own adult life. As a child reared in Columbus, Mississippi, Tennessee Williams's hometown, a community that cradled an architectural treasury, my own, twin passions were clearly set—architecture and writing. The connections between the two disciplines are rare, but urgent: language crystallizes, as architecture manifests, thought. Both literature and architecture can be as compelling as the minds that produce them; each must inform the other. As good architecture is worth exploring and understanding, good writers are worth reading. Where would we architects be without Vitruvius, John Ruskin, Lewis Mumford, or Jane Jacobs?

My own challenge, in assuming the editorship of ARCHITECTURAL RECORD, *will be to weave a more fully rounded portrait of this messy, glorious enterprise called architecture, enlisting the best minds available to cast a cold eye on both contemporary issues and actual work to provoke our collective thought. Good writers can do that.*

In this issue, we are proud to announce new arrivals to our roster of contributing editors. Architect, educator, and author Michael Sorkin, who attracted a wide following as architecture critic of The Village Voice *for ten years, will analyze architecture and urban issues at least four times per year. Letters of appreciation for Michael's contributions have already arrived.*

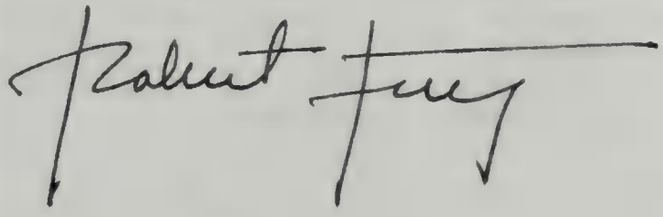
If you read the article on Cabrini-Green in our February issue [pages 84-89], you were introduced to Blair Kamin, the distinguished architecture critic of the Chicago Tribune. *He will continue to follow that critical public housing development, among other projects, in the coming months.*

Few writers on architecture have covered as broad a range of concerns as has Andrea Oppenheimer Dean. Fellow of the American Academy at Rome, former executive editor of Architecture magazine, *and currently editor at large of* Preservation *magazine, Andrea will bring a wealth of experience to any subject she tackles.*

Perhaps no American journalist knows more about the state of architectural education in the United States than Lee Mitgang, a senior fellow with the Carnegie Foundation and award-winning journalist. It was Lee who co-authored the 1996 Carnegie Foundation report on architectural education with the late Dr. Ernest Boyer. Lee will cover what he knows best.

In addition to our own talented staff, this magazine is blessed with a list of strong, regular writers who attract readers. Included in their number are contributing editors like Boston critic and Pulitzer prize-winner Robert Campbell, as well as a distinguished list of international correspondents, from Tokyo to Madrid.

The list is growing. Next month, we will announce three more names who are joining what will become an unparalleled community of writers about architecture. Words count, and this magazine will offer only the best, because architecture and writing lie at the core of ARCHITECTURAL RECORD.



LETTERS

The New Urbanism

Thank you for Beth Dunlop's fine article [RECORD, January 1997, pages 132-145], which makes clear that the New Urbanism is a movement with a young generation of real skill and commitment. Absent from the piece is a number of established firms. The offices of Cooper Robertson, Robert A. M. Stern, and Ray Gindroz are superb practitioners, and have been working in parallel with the first generation. Also, several large old-line firms are now capable of doing first-rate New Urbanist work, including CHK, Sasaki Associates, ROMA, JJR, and RTKL. There are also many medium-sized firms formed around New Urbanist principles, a list too long to give you now.

The New Urbanism is a locus of social equity, environmental responsibility, and economic reality. It is the basis for the comprehensive civil architecture, which will surely emerge when the last turn of fashion finally devours itself by its own tail.

Andres M. Duany, FAIA
Andres Duany and Elizabeth Plater-Zyberk, Architects
Miami, Fla.

Reinventing public housing

First of all, my sincere congratulations on your new format and on Mr. Ivy's first issues at the helm. Early signs are positive. I look forward to what promises to be an interesting and scholarly ARCHITECTURAL RECORD. February's question—Can New Urbanist planning and design principles be applied successfully to inner city-public housing? [Pages 84-89]—is of great interest to me. Both in my practice and in my design-studio teaching, I have confronted the issue of inner-city public housing and so I speak with some experience.

In short, I do not really think [illegible] New Urbanism or [illegible] let ourselves get [illegible] by engaging in a debate of the New Urbanism for public housing is to miss the point entirely. We are a country without a housing policy. That is the point.

Our society has turned its back on the issues of the inner city—housing, education, public health, transportation, economic development, and so on. What is the sense of discussing architectural or planning styles when HUD has virtually no ability to maintain what it has already built? Are we now going to spend millions of dollars on townhouses and white picket fences that line streets with re-zoned turning radii and actually think we are making a difference?

Why do we insist on mainly seeing the issue in such a formalist and predictably architectural manner? To allow the discussion to focus on HUD's latest hastily concocted formula for urban revitalization is to become as banal and shallow minded as those government bureaucrats who think that New Urbanism is a solution to public housing.

The New Hope VI initiative, upon which most of the New Urbanist/HUD love affair is based, is reminiscent of the "slum clearance" programs of the 1960s. Does HUD really have a well thought-out relocation strategy for tenants who are displaced? No. In fact it appears no one remembers what happened 30 years ago when buildings were taken down, residents displaced, and social and familial networks destroyed, all in the name of progress.

HUD suggests that the voucher program will provide displaced tenants with easy access to housing in "communities of their choice." Does anyone who knows anything about urban sociology really believe this? It is nonsense. Worse, it is immoral.

So let's not allow ourselves and our profession to become engaged in yet another stylistic debate. Let's put our effort and brainpower into something that really goes a little deeper than the cosmetic notions of New Urbanism.

Next month's question should provoke the design community to suggest a meaningful series of responses to inner-city public housing.

Leland D. Cott, FAIA
Principal, Bruner/Cott & Associates
Critic in Urban Design, Harvard Graduate School of Urban Design
Cambridge, Mass.



Samitaur without plans

I am so disappointed. You devote 12 pages to Eric Owen Moss' Samitaur Building [RECORD, February 1997, pages 52-63], and do not publish a single floor plan. Ms. Stephen's lucid and eloquent commentary *deserves* a detailed and annotated plan. With best wishes for success.

Arthur Rosenblatt, FAIA
RKK&G
New York City

The New RECORD

Just want to say that the new look of ARCHITECTURAL RECORD is great. I was impressed and pleased with it from the day it arrived. I especially like the short bits of information in RECORD News, the Architectural Press Roundup, and the expanded space you have given to viewpoints. Also the Project Diary is a great idea that helps me as an architectural student start to get an idea about how architects really work. Great job and thank you.

William Hurd

With the arrival of the two surviving periodicals on my desk in January, I couldn't help but feel that everyone has won in the recent shakeout of contenders. *P/A* was getting more and more boring as it got smaller and smaller. *ARCHITECTURE* seemed undecided and conservative over the past year and RECORD was just plain getting stale. If January is indeed a faithful promise and not just a first-month lure, then we can look forward to some commendable support material that is heartily welcome in our profession. I'll be keeping both subscriptions.

In fact, my first issue of RECORD was so popular in my office that it came back to me with a burst binding. If that is my only criticism of your efforts, you should consider your work well done.

Joseph Lengeling, AIA
New York City

Since the new year brought the new ARCHITECTURAL RECORD, congratulations have been in order for the great work in producing a quality book. When I received the February issue, a great follow-up to a new beginning, I just wanted to let you know that I truly enjoyed it.

I have always viewed your book as a great source of ideas for my current college projects because now is the time when I feel I can be most creative. The new format has made it a more valuable resource by ensuring a professional level that is easy to understand, enticing, and knowledgeable. The sophisticated use of color in your headlines complements the photography as well as the layout of the text, which is consistent with a great new cover. This gives me something new to look for on my desk each month.

Currently, I am studying for a degree in architecture and, having a background in graphic design, I can appreciate when the visual design that complements the editorial. For this reason, among many others, I find RECORD a most important reference tool for study. Your publication provides its readers with the extremes in architecture today and you again succeed. As professionals or students, we are in a position to shape and mold our surroundings. And in helping us with

(*continued on page 162*)



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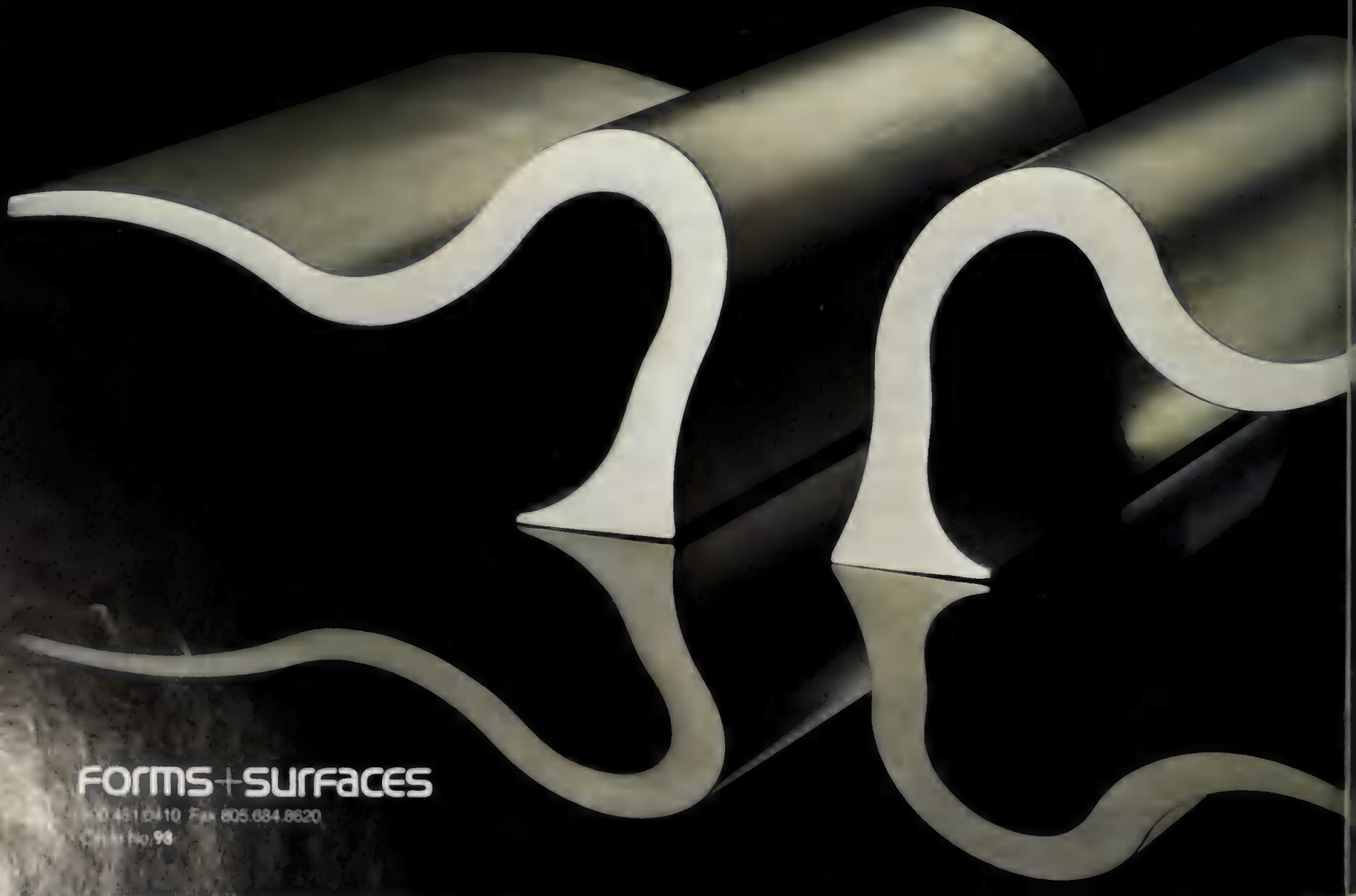
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Circle No. 98

SPEAK OUT: The case for kindergarten—a call for another look at Friedrich Froebel's amazing invention.



BY NORMAN BROSTERMAN

Architect Norman Brosterman's book Inventing Kindergarten (Harry N. Abrams), is being published this month. "Froebel's Gifts: Educating Children Through Design," an exhibition of Brosterman's collection of turn-of-the-century kindergarten material, will be at the Arthur Ross Gallery, Buell Hall, Columbia University, New York City, from April 2 - May 2.

"I wanted to go to work for the great moderns, Adler and Sullivan; and finally I went... equipped, in fact armed, with the Froebel-kindergarten education I had received as a child from my mother.... Along with the gifts was the system, as a basis for design and the elementary geometry behind all natural birth of Form."

—*Frank Lloyd Wright, A Testament*, New York 1957, Horizon Press.

German educator Friedrich Froebel invented kindergarten in the 1840's as a method to teach the very young how nature designs. Intended to show four- to seven-year-olds the fundamental geometry of crystals and beehives, seashells and flowers, Froebel's system was the foundation for Frank Lloyd Wright's "organic architecture," and the reason all the separate parts of Wright's buildings sing in such radiant harmony. According to Wright, before he was 10, the seed for his mature approach to design had been planted within him by his kindergarten teachers.

Recent research points to direct links between infant experiences and physical brain development. Music and rhythm exercises at the age of two result in advanced puzzle-solving abilities at age four. Languages are easily assimilated by little children because neural circuitry is relatively fluid in the first years of life. Kindergarten's formal language—three and two-dimensional elements including cubes, grids, triangles, sticks, and rings—paraphrased nature's own elemental language of growth. It was promulgated by Froebel as a means to gain access to the logic underlying the ebb and flow of creation, and an introduction into the basic structure of learning itself. It was also, in a straightforward way, the most sophisticated system ever devised for teaching the young about design, tectonics, mathematics, and the natural world.

With art and music classes already at the bottom of most primary school agendas, it seems unlikely that something as superficially esoteric as design for children will catch on anytime soon. But what would happen if pupils were trained to see with as much rigor as they're taught the three R's? If small children were exposed to a primary course in basic design that theoretically clarifies nature's essence, would it heighten their interest and respect for the environment as Froebel hoped? Would it slow the replacement of wetlands and virgin desert by strip malls and careless housing developments? Would children thus trained grow up and demand more from developers, architects, and themselves?

Wright was impressed enough with kindergarten to espouse its importance repeatedly in his writing and lectures. Less recognized is the fact that most of the generation that created the salient forms of the early 20th century, including Le Corbusier, Piet Mondrian, Wassily Kandinsky, Josef Albers, and most of the other Bauhaus masters, were also kindergarten graduates like Wright, and they too were touched by Froebel's methods in youth. The pure kindergarten that trained this illustrious group was abandoned in most countries shortly after the 20th century began, losing out to the scourge of tested knowledge for the very reasons that recommend kindergarten's revival today—open-endedness, structured freedom, universality, and an emphasis on learning to learn before focusing on specific skills.

This is not a call for a new design utopia and I don't imagine children will ever choose Aalto furniture over "Tickle Me Elmo." But after years of research into Froebel's theories and methods, I think he may have been onto something truly revolutionary that could be adopted in some way again. As we approach the third millennium, the educational system invented and named kindergarten by Friedrich Froebel 150 years ago ought to be reinvestigated for its potential relevance to the future of design and society in general.

Contributions:

If you would like to express your opinion in this column, send submissions: by mail (with a disk, if possible) to Speak Out, ARCHITECTURAL RECORD, *1221 Avenue of the Americas, New York, N.Y. 10020; fax 212/5124256; mail: rivy @mcgraw-hill.com. Essays must not exceed 700 words. The editors reserve the right to edit for space and clarity. Where substantial editing occurs, the author will receive final text approval.*

MENTORS: A Navy architect about to retire seeks employment advice, and an intern wants to know about raises.

Jack DeBartolo, Jr., FAIA, is a principal of DeBartolo/architects in Phoenix, Ariz., and the chancellor, College of Fellows, American Institute of Architects. He specializes in campus planning and high-tech research laboratory, educational, and healthcare facilities.

Ken L. Ross, Jr., AIA, is a principal of Watkins Carter Hamilton Architects of Bellaire, Texas, president-elect of AIA Houston, and chairman of the Committee on Architecture for Health of the Texas Society of Architects.





I am retiring from the U.S. Navy next month after 15 years on active duty in the Civil Engineer Corps. I am 41 years old, and a registered architect. I hold graduate degrees in architecture and urban planning. I have extensive experience in facilities planning, maintenance and construction management, general administration, and environmental compliance. While I am not interested in joining a traditional architecture firm, I would like to work with architects at the management level in a large development organization. All of the developers that I have contacted, however, seem to be looking for business school graduates. Should I risk overqualifying myself by getting a third graduate degree in business administration? Where else should I be looking for employment?
—Scott P. Calisti
Meridian, Miss.

Jack De Bartolo, Jr., FAIA responds: Before you rush off to get your MBA or lock down another position, take time out to evaluate your professional direction. At this point in your career, good experience must be joined with a clear "vision" of what you want for your future. Now is a perfect opportunity to seek "significance" in your career objectives. Start by looking at your experience inventory in detail. Most people do best if they first evaluate what they love; the deep-rooted passion that drives them.

As for a graduate degree or selected courses of study in business, either would assist you in assessing your experience and establishing your professional value. Further, we must never forget that architects render services to the client in a "business environment."

Based on your experience, you will likely find that you are considered most valuable to institutions, municipalities, or quasi-governmental organizations. Universities, cities, and towns own or manage large numbers of buildings and are constantly working with architects and engineers.

Don't quickly overlook the "traditional" architectural firm, however; numerous firms are establishing new paradigms for practice in the 21st century. Your experience in the past 15 years may be captivating to an employer when defined in terms of vision and state of the art techniques of project delivery. Go for significance.

I am an architectural intern with 3 1/2 years experience. In March, I will start taking the A.R.E. At the moment an intern transforms into a registered architect is it standard practice to receive an increase in pay? My annual salary is in the low $30,000s, and I have been with my current employer for just 14 months. During those months, I have received two raises, the first an 11 percent increase and the second a 7 percent increase. What sort of increase should I expect/request when I become registered? Most of my peers are at the same point I am and are asking the same question.
—An intern in Boston

Ken L. Ross, Jr., AIA, responds: It has been my experience as an intern, practitioner, and employer, that there are no automatic pay increases upon passing the exam. Typically, there is also no immediate increase in project responsibilities.

Professional and compensation growth are dependent on many factors that are not part of the exam, such as: productivity level for the project assignments available; perception of your loyalty to the firm; your tenure with the firm; your interpersonal skills; your potential for leadership; your ability and willingness to accept responsibility to mentor and nurture the professional growth of less experienced employees; and your contribution to a positive work environment.

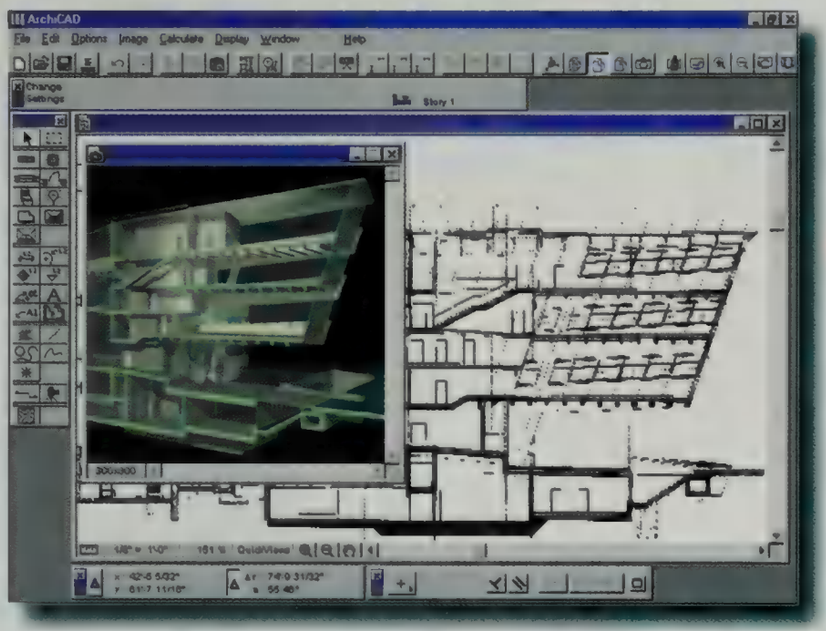
Passing the exam is an important milestone that will draw attention to your accomplishments, but not an event that instantaneously increases your value in the firm. However, based on the compensation increases mentioned in your question, it appears your current employer values you now.

Questions: *If you have a question about your career, professional ethics, the law, or any other facet of architecture, design and construction, send submissions: by mail to Mentors, Architectural Record, 1221 Avenue of the Americas, New York, N.Y. 10020; fax 212/512-4256; or e-mail: rivy@mcgraw-hill.com. Submissions may be edited for space and clarity.*

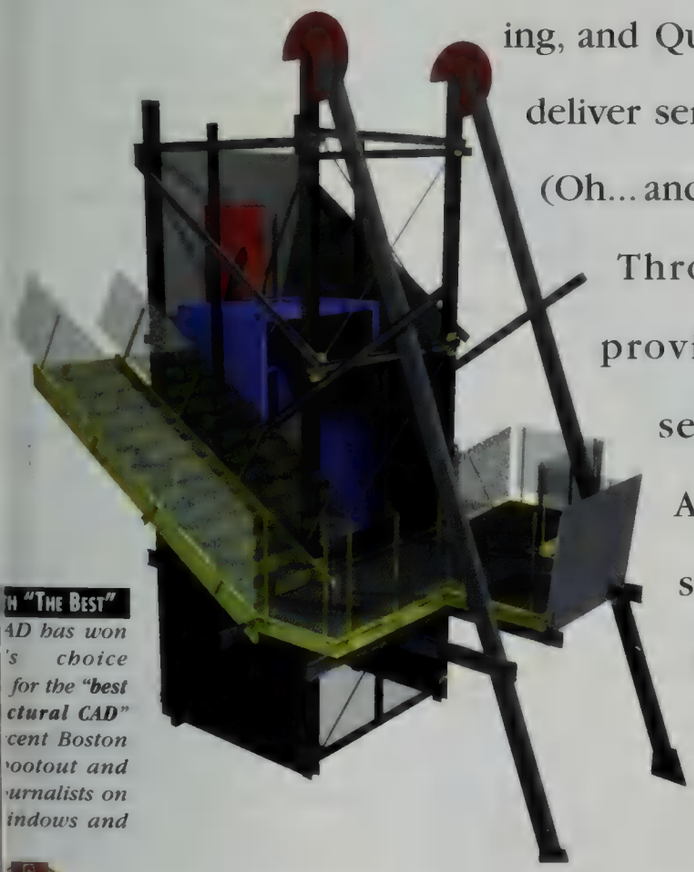
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PULSE: Readers were asked: Can New Urbanist planning and design principles be applied successfully to inner-city public housing?

YES: 53% NO: 47%

Yes: "A primary goal of the New Urbanism is to create a sense of neighborhood. New Urbanism is more than just physical design, it addresses social, cultural, and economic issues as well—factors not often mentioned by critics. It is the policy of the City of San Diego, where we're trying to integrate low-rise public housing with available services, schools, management, everything. The goal is that public housing is totally integrated so it doesn't look like public housing. And it doesn't."
—Michael Stepner, FAIA, AICP, City Urban Design Coordinator, San Diego, California

Yes: "New Urbanism can succeed only if it is applied as a catalyst and not as a grand plan scheme akin to Pruitt-Igoe-style Modernist urban renewal. By 'catalyst,' I mean a small-scale application. If it succeeds and is profitable on a small-scale, developers will emulate it. I've seen small projects have an amazing cascading effect. It takes time, but it's the only way."
—Gregory Wharton, architect, Demetriou & Associates, Kirkland, Washington

Yes: "I believe that the principles of human scale, buildings that are friendly to the pedestrian, and neighborhoods that promote a sense of community can and definitely should be applied to inner-city housing. But I question why everything in New Urbanism is traditional design. We can use the principles, but design in a Modern esthetic."
—Mary Ellen Commisso, architect, 11C Architecture, Rexdale, Ontario

No: "I don't think that New Urbanist principles will work any better than anything else we've tried on public housing. Most of what the New Urbanists promote is unreal, Disneyland-type planning that assumes today's problems in our built environment can be solved with the organizing principles of our 18th and 19th century settlements. The idea that we can get our fellow citizens out of their cars and into mass transit is Pollyannish; it isn't going to happen. For too long, we've suffered the plans of planners—first with exclusionary zoning, then planning by mathematics, and now this."
—Dick Bundy, FAIA, Architects Bundy & Thompson, San Diego, California

No: "New Urbanism is founded on the principle of mixed-use development. The term public housing means only housing is present, and it is a term associated with the destructive nature of zoning. I do, however, believe cities can be saved by eliminating zoning regulations and establishing mixed-use regulations. This is our only hope."
—Nathan Isley, AIA, Isley Architects, Inc., Durham, North Carolina

No: "What better way to complete the alienation of the (primarily African-American) poor than to impose a Colonial town grid into their neighborhoods? What more apt symbol is there of a group trying to colonize their own citizens; to wipe them clean of identity, of meaning, like the site Seaside was built on."
—Elliot Taub, architectural intern, John Ciardullo Associates, New York, New York

This Month's Question:

Is themed retail architecture real architecture?

The New York-New York casino-hotel in Las Vegas is "to architecture as telephone sex is to sex," says one critic. Managing Senior Editor James Russell writes, "Naysayers claim themed architecture is the end of architecture as we know it—Mickey Mouse at the controls of a bulldozer..." Others, however, see the niche as a unique design culture and a bonanza for the profession.

Do you think themed retail architecture is real architecture?
☐ **Yes** ☐ **No**

Let us know your opinion:

May an editor contact you for further comments? ☐ Yes ☐ No

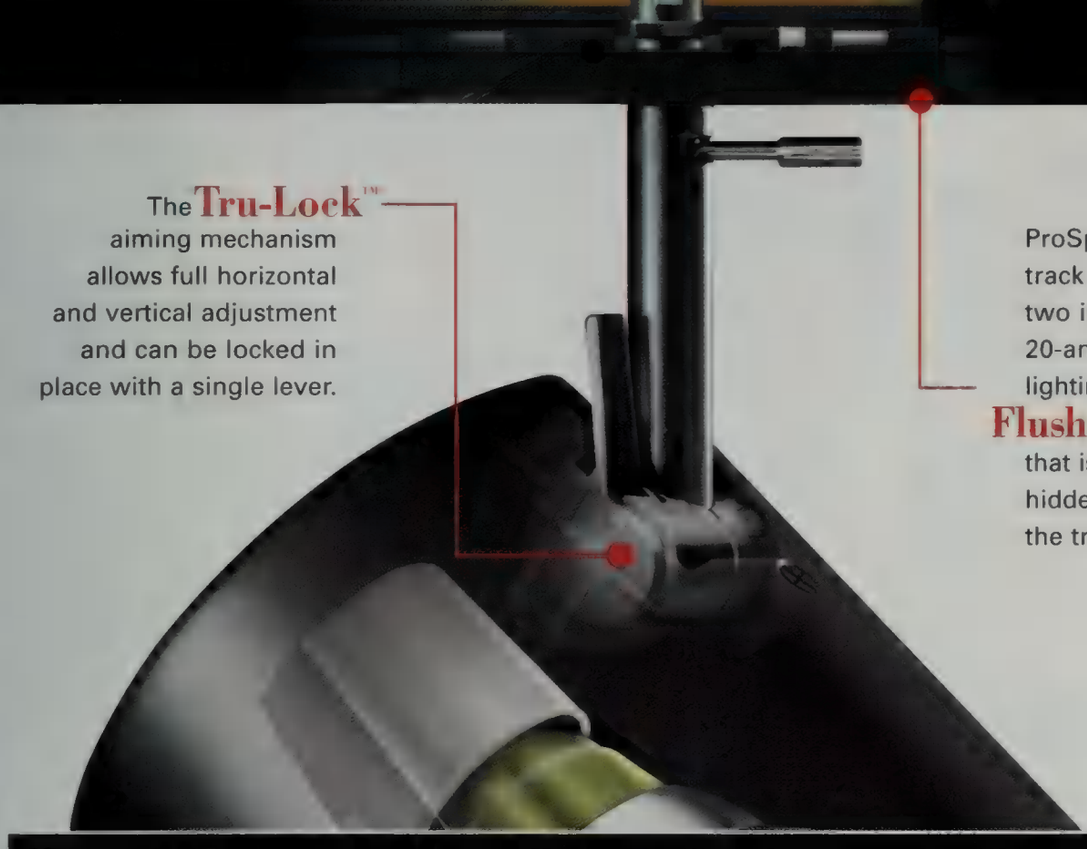
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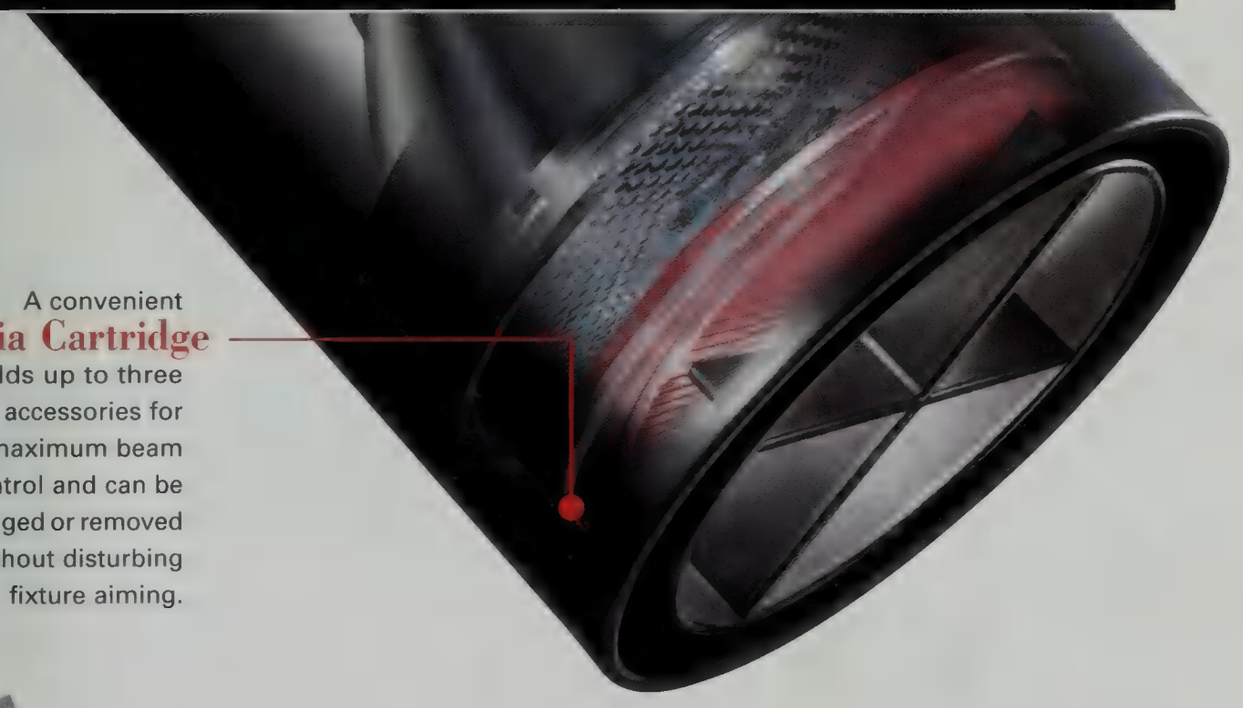
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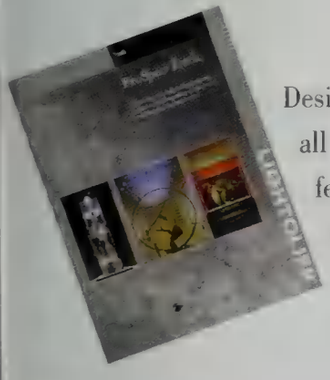
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SALARIES ARE UP ACROSS THE BOARD IN NEW AIA COMPENSATION SURVEY

Architectural firms are doing a better job of keeping their salaries competitive and offering more benefits, according to the AIA's just-released report, "Compensation at U.S. Architectural Firms."

"We were pleasantly surprised to see salaries keep up with the broader professional services area...and architectural firms not losing ground," said AIA Chief Economist Kermit Baker, who prepared the report, the first of its kind produced by the AIA in six years.

The survey found that salaries for staff architects and interns have increased 22 percent since 1990, or slightly less than 3.5 percent a year on a compound basis. From 1990-1993, when the construction industry was in recession, "largely stagnant" salaries increased on average 2 percent a year, according to the report. But beginning in 1994, salaries have been increasing close to 5 percent a year.

Salary gains for more senior firm members have been even higher since 1990. Associates' salaries went up on average 4 percent a year, while increasing only 2 percent for Architect I positions. Gains have been nearly identical to those for the U.S. Labor Department's "business services" category, which includes architects and other professionals like lawyers and accountants. The category showed a 3.5 percent annual increase over the same six-year period. However, the bulk of "business services" gains came earlier, rather than later in this period, when inflation was higher.

Salary gaps between regions and between large and small firms have been steadily shrinking over the 1990-1996 period. "Some improvement in the market is lifting all of the boat," said Baker, enabling regions and firms to "catch up."

ARCHITECT SALARIES ON THE RISE

POSITION	AVERAGE SALARY			TOTAL % CHANGE IN SALARY		
	1990	1993	1996	1990-93	1993-96	1990-96
ASSOCIATE	$47,600	$50,500	$58,900	6%	17%	24%
MANAGER	43,400	45,300	53,100	4	17	22
ARCHITECT III	38,000	38,600	45,400	2	18	20
ARCHITECT II	33,800	34,300	38,900	1	13	15
ARCHITECT I	30,000	30,000	33,200	0	11	11
INTERN	24,200	24,700	27,200	2	10	12
ALL ARCHITECTS*	**34,400**	**36,500**	**41,900**	**6**	**15**	**22**

* EXCLUDES PRINCIPALS AND PARTNERS

REGIONAL SALARY DIFFERENCES

REGION	AVERAGE SALARY		TOTAL INCREASE 1990-96	AVG. ANNUAL INCREASE 1990-96
	1990	1996		
NEW ENGLAND	$35,200	$42,100	20%	3.0%
MID-ATLANTIC	36,200	43,000	19	2.9
EAST NORTH CENTRAL	34,000	43,100	27	4.0
WEST NORTH CENTRAL	32,100	42,900	34	5.0
SOUTH ATLANTIC	33,800	40,300	19	3.0
EAST SOUTH CENTRAL	31,000	40,000	29	4.3
WEST SOUTH CENTRAL	31,600	38,800	23	3.5
[illegible]	[illegible]300	40,700	30	4.5
[illegible]	[illegible]400	43,400	19	3.0
[illegible]	34,400	41,900	22	3.4

Regional differences

Salaries are highest in the Pacific Southwest, including Los Angeles and San Francisco, exceeding the national average by 4 percent (down from 6 percent in 1990), and lowest in the West South Central region (Arkansas, Louisiana, Oklahoma, Texas), where salaries in 1996 were 7 percent behind the national average. In 1990, the East South Central region had the lowest salaries—almost 10 percent below the national average.

Small firms

Salaries at small firms increased at almost twice the pace of salaries at large firms from 1990 to 1996, according to the AIA compensation survey. While 1990 salaries at firms with fewer than five employees were on average 36 percent below those at firms with 20 or more employees, by 1996 this gap had narrowed to 20 percent.

Principals

Principal and partner average compensation is closely tied to firm size, the survey showed. The majority (58 percent) at firms with fewer than five employees make under $75,000. At firms with 50 or more employees, 72 percent report making $100,000 or more.

Entry level

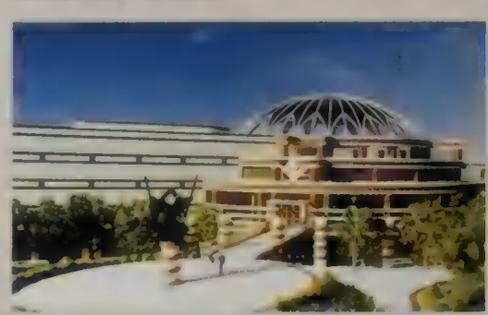
Entry-level salaries are more consistent, 5-6 percent above or below the national average from region to region. Entry-level candidates in 1996 were paid a 5-10 percent premium by 30 percent of the firms. Salaries of employees other than architects have increased 20-25 percent since 1990, or at about the same pace. These include engineers, landscape architects, interior designers, and drafters.

Benefits

The type and amount of benefits are improving. In general, the larger the firm and the higher the salaries, the greater are the benefits, the survey revealed. A full 90 percent of firms provide medical insurance; a majority provide life insurance and profit sharing/ bonuses; almost half offer a retirement plan; and a third provide dental insurance and long-term disability coverage. *Carol Reed*

DETROIT'S AFRICAN-AMERICAN MUSEUM TO BE LARGEST OF ITS KIND IN WORLD **The Museum of African American History in Detroit has launched a major expansion that will make it the largest black historical museum in the world. The new facility, which will quadruple the museum's current space when it opens in April, is designed by Sims-Varner Architects, Inc., a Detroit-based African-American firm.**

The building expression was conceived as "contemporary American yet expressing antecedents leading back to Africa," said Harold Varner, president of Sims-Varner. "The building's sculptural columns are based on a traditional African rope motif. Feature stones around the entire perimeter are sculpted in traditional African forms. Most of the major interior spaces have carved wooden doors and surrounds based on African art," he said.



The $38.4 million project will house three galleries, a domed lobby and rotunda floor, classrooms, a museum shop, 317-seat theater, amphitheater, and restaurant.

A SMALL-TOWN DESIGN COMPETITION CAUSES BIG-TIME CONTROVERSY





The jury's choice (top) and residents' choice.

The Long Island, New York, village of Greenport may be small (2,000 year-round residents) and its waterfront development project may be modest ($3 million would be pushing it), but that didn't stop 800 people from as far away as Teheran, Tokyo, and Istanbul from paying $50 to enter a design competition for the prime 3.4-acre site.

The controversy surrounding the competition, on the other hand, was Manhattan-sized. The jury chose the entry by Philadelphia landscape architect James Corner, who submitted only an ink-lined scheme, presented in plan and section, and lacking the three-dimensional models or lush perspectives of other entries. Some Greenporters were put off by Corner's industrial esthetic; others sought a commercial approach.

The jury chose Corner's scheme because they felt it resolved an urban and ecological tension endemic to the highly urbanized site on an ecologically fragile bay. "We looked for entries that combined humility and optimism tied to buildability," commented juror Billie Tsien of Tod Williams, Billie Tsien and Associates at a recent panel, sponsored by the Architectural League of New York and the Van Alen Institute, held to discuss the competition. The jury, which also included Erik Kiviat, an environmentalist, sculptor Mary Miss, Sandro Marpillero, a Columbia University urban design professor, architect James Stewart Polshek, and landscape architect Nicholas Quennell of Quennell-Rothschild Associates, liked the winning entry in part because it didn't design every square inch of the site but created a strong armature that could be filled by residents.

The residents' wishes, however, may lie more with the third-place choice, by Christopher Sharples of Sharples Design in New York City, which offered a more conventional vision of beach and boardwalk. This design was the choice of a 30-member committee, appointed by Mayor David Kappell to represent the town's diverse population following widespread dissatisfaction with the first choice. *James S. Russell*

ARCHITECTURAL PRESS ROUNDUP

100 BEST DESIGNS

METROPOLITAN HOME, March/April, 1997 Among the hodgepodge of people, products, and ideas deemed "essential for a new age," the magazine's editors selected a handful of architectural projects, most notably Renzo Piano's Cy Twombly Gallery in Houston [RECORD, May, 1995, pages 78-83], Tod Williams and Billie Tsien's Phoenix Art Museum [RECORD, January, 1997, pages 84-97], and Steven Holl's Makuhari Housing complex on the outskirts of Tokyo [RECORD, January, 1997, pages 64-77]. Also cited are Gianfranco Monacelli, publisher of Monacelli Press for his "prestigious line of architectural monographs," and architect Samuel Mockbee of Auburn University whose Rural Studio lets students do hands-on-work in poor communities [RECORD, March, 1996, pages 74-77].

STANDING UP FOR THE PROFESSION

New York Times, February 11, 1997 Mary Ellen Comisso, R.A., of Long Island City, N.Y., is in a fit about the news the paper's real estate section deems to print. "When is the *New York Times* going to stop discrediting the profession of architecture such as it has in 'the last year with feature articles such as 'A Mouse in the House? Click Here' and 'A Connecticut Couple Build Their Dream House.' Comisso claims that the "mouse" article "positively encourages" people to avoid paying architects by designing their own homes with home design software packages. "One of the biggest problems with American building today is that everyone thinks they can replace the architect," she scolds. "Have you looked around your neighborhood lately? Or your city?"

BRITISH CRITIC GETS NASTY WITH SAFDIE

The Architectural Review, January, 1997 Peter Davey, editor of the British monthly, overdoes it with his lashing of Moshe Safdie's public library in Vancouver, B.C. "Why, when building an institution devoted to civilization and learning, choose as a model the Coliseum—a place devoted to bloody destruction and the gratification of humanity's basest instincts?... It almost seems as if Safdie decided that those hicks in British Columbia deserved a little culture but that he could not quite find the energy or budget to bring Rome to the Northwest Pacific."

THE GREAT LIBRARY DEBATE

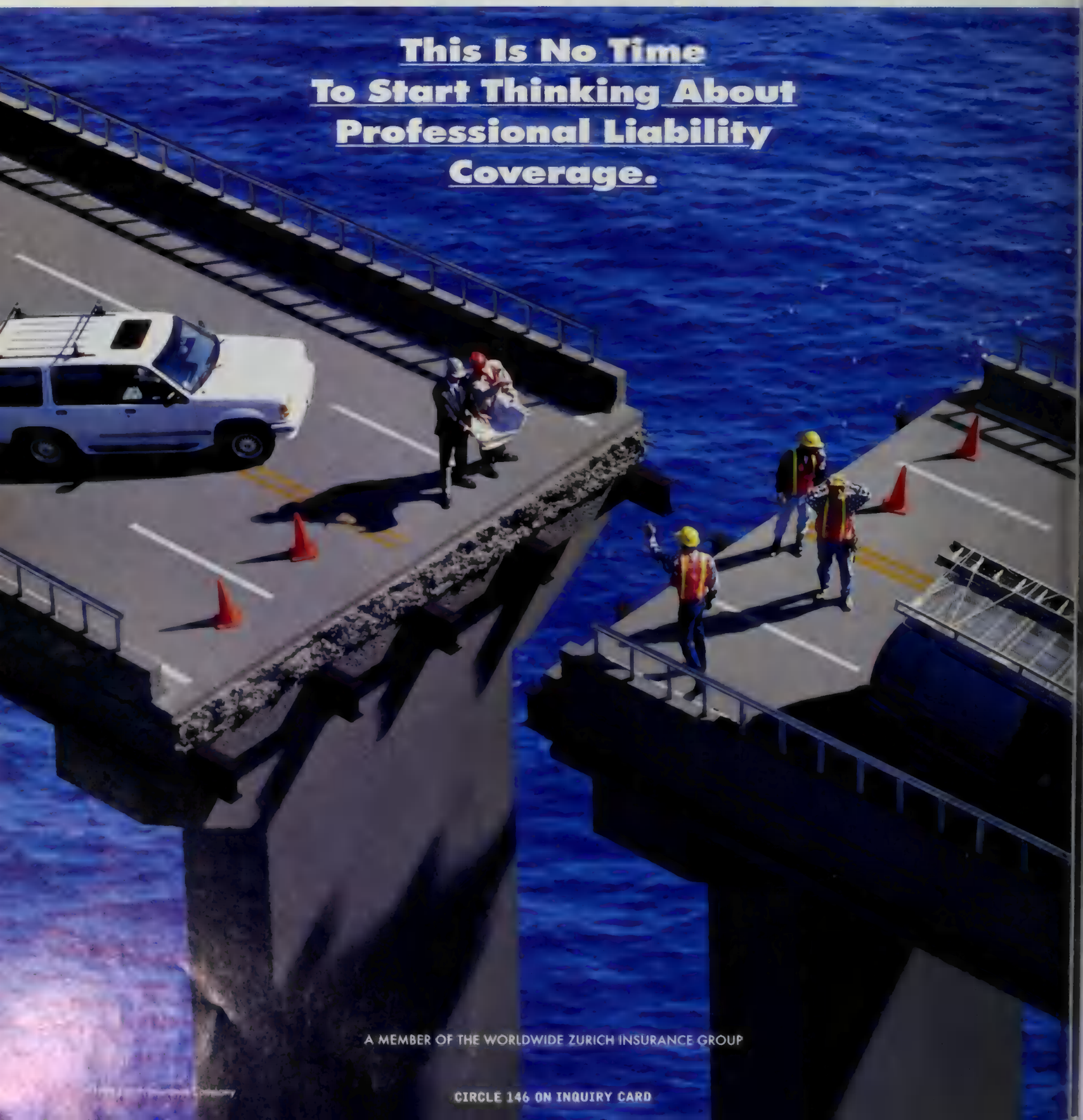
Los Angeles Times, February 1, 1997 San Francisco's New Main Library has divided that city's residents, resulting in the firing of the chief librarian. Although library use has increased significantly and some people are thrilled with the building, some others, including many Bay Area writers, see it as a "betrayal." The reasons, they say: too much technology, too few books, and "irrelevant design." A *Times* editorial gloats about how much better L.A.'s library turned out. The *Times* quotes the chief architect on the San Francisco building James Ingo Freed as saying, "Old libraries told stories of power. But great tombs are no longer our forte. We needed a place for communities to celebrate their own essences." Refuting that statement, the *Times* says, "Freed is posing a false dilemma. Buildings steeped in the past can certainly prove empowering in the present. For proof, Freed need only have looked at Los Angeles's own Central Library..."

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CIRCLE 146 ON INQUIRY CARD

NEW MASTERPLAN FOR FLORENCE AIMS TO INTEGRATE NEW WITH OLD

Still regarded as a beacon of Renaissance beauty, Florence has nonetheless succumbed to the urban crush and suburban sprawl plaguing most European cities. But Florence's city fathers are fighting back with its first masterplan in three decades. Begun in 1993 by Roman urban planning professor Marcello Vittorini, the plan is intended to create, according to Vittorini, an "integrated," modern city for Florence's 400,000 inhabitants and to maintain its artistic heritage despite the heavy toll exacted by seven million tourists a year.

Vittorini said the masterplan tries to breathe life into monotonous industrial areas and to address the problems of congestion and pollution with a complex system of large parks, "alternative" inner-city transportation, and five new administrative "boroughs." There is a "possibility," he said, the plan will actually be implemented, but "it will take a long time."

A major target of redevelopment is the post-war Castello industrial area, which Florence's councilor for urban planning, Enrico Bougleux, wants to transform into a thriving mixed-use development. A framework plan will be executed by Renzo Piano and Richard Rogers, who worked on Castello plans and designs a decade ago when a former leftist city council was in power.

Also, the recently elected city council commissioned Roman architecture professor and urban planner Leonardo Benevolo to research a new framework plan to find uses for about 3,650,000 sq ft of deserted 19th-century industrial areas in the greater metropolitan area.

For the 1960s-era district of Novoli, an industrial wasteland of high-rise blocks in northwest Florence, a framework plan by Leon Krier suggests creating 14 neighborhoods, each with modest residential and commercial premises built of traditional materials.

The plan, endowed with what Vittorini calls "a touch of genius," also calls for dismantling and moving to another area a large Fiat spare parts factory and redeveloping the site into a 30-acre park surrounded by 90 acres of new residential and commercial buildings, a courthouse, and two university faculties. An international team of architects, supervised by the team of Roberto Gabetti and Aimaro Isola, is attempting to realize Krier's vision. *Cristina Donati*



Gabetti and Isola's plan for the Novoli district of Florence.





STERN'S LIST OF LANDMARKS CREATES A STIR IN NEW YORK CITY

Robert A.M. Stern has raised a few eyebrows and a few hackles with his recommendations for designating 35 Modernist buildings in New York City as landmarks. The buildings, built between 1932 and 1967, are, he admitted, not necessarily beautiful or popular, or what people typically consider to be landmark caliber. "But they may be very important technologically, historically, or culturally," he argues. "They are transitional buildings which represent the reaction of Classicist architects to the Modernist ideals," and therefore deserve to be protected from demolition or alteration. The buildings on the list include skyscrapers, such as the U. N. Headquarters, and the Socony-Mobil Building (above left); civic buildings, including the Main Brooklyn Public Library and the George Washington Bridge Bus Station; and facilities for the arts such as Lincoln Center; parks, apartment complexes (240 Central Park South, above right), and industrial buildings like the Knickerbocker Laundry in Queens.

MODERNISTS VIE TO DESIGN NEW IIT CENTER **One of the major architectural events of the year is taking place in Chicago: an international design competition for a new campus center at the Illinois Institute of Technology. The building would provide a new focal point for a campus planned by master Modernist Mies van der Rohe.**

As currently envisioned, the competition will be by invitation only and is expected to be limited to designers whose work fits in the category of Modern architecture. The objective is "to make the building more manageable and affordable and still remain true to the heritage of Mies," according to Donna Robertson, the new dean of IIT's College of Architecture. About 40 architects from around the world are expected to participate.

Robertson stressed that the university's list would include more than the "usual suspects," with young, relatively unknown firms being asked to compete with more established firms. It is also expected that the competition will involve different types of Modernism—ranging from the high-tech designs of Britain's Norman Foster and Chicago's Helmut Jahn to the low-tech efforts of those concerned with issues such as environmental sustainability. Invitations will be issued by April, with a jury to winnow the list to five finalists by June. A winner would be selected by early fall, with completion set for 1999 or 2000. ***Blair Kamin***

FIRST TOTALLY SELF-SUSTAINING HOUSE IS BUILT IN TORONTO

North America's first totally self-sustaining house—there are no municipal water, hydroelectric, sewage, or natural gas connections—has been built in downtown Toronto, Ont.

Canada Mortgage and Housing Corporation (CMHC), a federal agency and principal sponsor of the "Toronto Healthy House," expects 40,000 visitors to tour the 1,700-sq-ft, semi-detached house in the next four months.

The three-bedroom, urban-infill house takes its name from a 1992 CMHC healthy house design competition won by Toronto architects Martin Liebheffer and Myrna Moore. Builder Rolf Paloheimo, who built the house, purchased it and is living there with his family. The other half of the semi-detached structure, presently for sale, is identical, except for a hydro-electric connection (for that house only) in case of an emergency.

According to CMHC literature, the healthy house is able to "harvest its own energy, collect rainfall and purify it for drinking, and biologically treat its own wastes." Environmental sensitivity is emphasized in the insulation, indoor-air quality, water/energy conservation, recycling, and waste-management aspects of its design.

The major features of the house include:

- Wood-frame construction and hollow blocks of compressed, lightweight cellulose fibers filled with concrete that improve the wall insulation and facilitate installation, from the foundation up. Plaster, rather than drywall, was applied inside.
- Twelve rooftop solar panels produce electricity that is stored in batteries in the basement. Appliances are energy-efficient (the refrigerator uses about one-fifth the power of a conventional model). If the sun isn't bright enough to charge the solar panels for several days, an ethanol-fueled auxiliary generator kicks in.
- Water captured from rain and melted snow is stored in a 20,000-litre cistern, enough for a four- to five-month supply. Drinking water is purified through a "slow sand" filter, charcoal, and ultra-violet light.
- Some wastewater from showers and kitchen sinks is recycled to the toilets, washing machine, and dishwasher, and the wastewater from those three sources is filtered and biologically treated before being returned to the cycle.
- Solar heating is captured and stored in the floors and radiated at night, if necessary. In extremely cold temperatures, the solar heating can be reinforced by warm water circulated through pipes within the floors. Cooking is by electric convection oven.
- Heat gain during hot weather is controlled by window shading, moderated air flow, and evaporative cooling through a heat exchanger. There is no air conditioning in the house, but openable skylights at the back of the sloping roof allow air to circulate inside.



Greg Allen, an aeronautical and environmental engineer, and partner in Allen Associates Ltd., Toronto, who designed the alternative systems in the house, says: "All the devices in the house and the building envelope are very efficient...from insulation levels of triple, low-E, gas-filled windows to an electrical load that is about 10 percent of a typical house, to heat recovery ventilators... we have virtually no heating load."

Debra Wright, a senior CMHC advisor who has been monitoring the progress on the house since its completion, estimates annual operating costs at under $100 for back-up fuel, filters, and ultra-violet bulbs used for water purification and other maintenance needs.

The healthy house will use about 3,600 kwh a year. A normal house its size, with three or four occupants, would consume about 8,000 kwh a year. *Albert Warson*

HOW DOES IT FEEL TO BE AIA FIRM OF THE YEAR?





Weeks after winning the AIA's 1997 Architecture Firm Award, husband-architect team Robert Michael Kliment and Frances Halsband still [illegible] seclusion [illegible] given to [illegible]

"We're amazed they found us out there." R.M. Kliment & Frances Halsband Architects is a 22-person firm located in New York City.

The award, which will be presented at the May AIA national convention in New Orleans, is presented annually to a practice that has produced distinguished architecture consistently for at least a 10 year period.

Past winners include I.M. Pei & Partners, Venturi & Scott Brown, and Polshek and Partners.



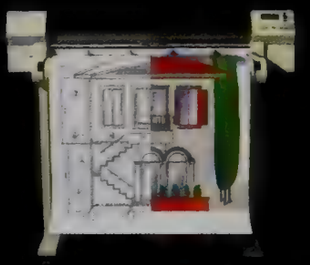
The firm is well known for the entrance pavilion for the Long Island Railroad at Penn Station.

In support of the firm's nomination, Cesar Pelli, 1995 AIA Gold Medal recipient and principal, Cesar Pelli & Associates, said: "Kliment and Halsband design innovative, sensitive, responsible, and beautiful buildings. They are great models for the kind of architecture our cities desperately need."

Although Kliment and Halsband have done a broad range of work in the areas of buildings, planning, interiors, and preservation, the firm is best known for the new entrance pavilion for the Long Island Railroad at Penn Station, New York City.

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CIRCLE 148 ON INQUIRY CARD

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CLINTON'S 1998 BUDGET CALLS FOR REDUCED FEDERAL BUILDING

President Clinton's fiscal 1998 budget proposal draws a gloomy picture for federal buildings. The most dramatic item: The General Services Administration is seeking no funds for its new construction account in 1998. Other key agencies' budget requests also are down sharply from 1997 levels.

The Clinton administration feels "there just isn't much discretionary spending money available," said Robert A. Peck, commissioner of GSA's Public Buildings Service. And with a big building effort already underway at GSA, officials felt the agency could sustain a pause on new construction. The hiatus on GSA spending is expected to last just one year.

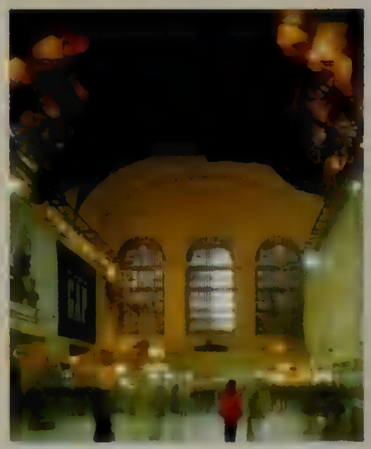
Peck also noted that projects funded in 1997 and earlier years will continue. This year's allotment for new GSA construction is $658 million, most of it for courthouses. "I think people will see a number of selections of architects and a number of construction awards in fiscal 1998 with money that was set up in previous years," Peck said.

Clinton's budget is just a starting point. It will be up to congressional appropriators to determine how much federal buildings and other programs receive for 1998. Lawmakers are just beginning what will be months of discussion and debate on spending priorities. But John A. Sporidis, senior vice president and director of federal programs for architect HDR Inc., thinks Congress may not increase Clinton's recommended levels substantially. "I don't think there's much room to add anything of substance," he says.

The news isn't much better at other agencies. The facilities budget for the Federal Bureau of Prisons would be sliced 36 percent, to $253 million under Clinton's plan.

The Department of Veterans Affairs' major construction account would plummet 68 percent, to $80 million. The Department of Housing and Urban Development wants $524 million, just five percent less than this year, for its continuing effort to demolish old high-rise public housing projects and build new low-rise units. *Tom Ichniowski*

GRAND CENTRAL REDUX **The top-to-bottom, $175 million renovation of Grand Central Terminal in New York City has moved from Phase One to Phase Two. Headed by Beyer Blinder Belle, the three-year project includes work on the main terminal, passageways to the streets and subways, and 123 tracks covering 76 acres. Phase One of the renovation, currently in its last stages, involves the landmarked Main Concourse and infrastructure improvements. Phase Two involves the restoration of the cerulean blue Constellation Ceiling 125 feet above the Main Concourse, with specialized crews working from a custom-designed scaffold. Non-landmarked circulation areas will be remodeled in Phase Three to include new heating and cooling systems. A monumental stairway planned in 1913 by the Terminal's original architects, Warren & Wetmore but never built, will also be constructed.**



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Friedrich St. Florian in Washington. His winning memorial above.



W.W. II MEMORIAL DESIGN WINNER TELLS OF CHALLENGE AND TRIUMPH

It was no easy task coming up with the winning design for the first national World War II Memorial which will be built on the Mall in Washington, D.C. Architect Friedrich St. Florian, who won the competition, explained that the challenge came "not just because of project's prominence or significance," but because of two restrictions: No element of the memorial could obstruct the open view between the Washington Monument and the Lincoln Memorial, and the historical plan of the Mall could not be altered.

St. Florian's solution was to place the memorial plaza in a sunken area 15 feet below ground level which, he said, "created a space with autonomy without disturbing the open vista."

Bordering this sunken plaza are two earthen embankments that flank the north and south ends. The berms, covered by white roses—representing innocence and peace—are anchored by two half-circles of 25 descending columns. "By being free-standing, each column represents the autonomy of each of the 50 states, but their joining in a half-circle, like children holding hands, signifies the collective will of the American people to stand up for ideals and principles," explained St. Florian, the former dean of the Rhode Island School of Design.

The architect also struggled with reconciling the sheer grandeur of a memorial with the brutality of armed conflict. "World War II is, in a sense a glorious war—a triumph of democracy over totalitarianism," he said. "But at the same time, wars must be remembered but not glorified, because even with a war that has such noble intentions there is also incredible suffering on both sides. So rather than impart a sort of imperial splendor, the design is meant to convey modesty."

The project, slated to cost $100 million, will be funded through private donations, with a dedication projected for Veteran's Day, 2000.

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CIRCLE 149 ON INQUIRY CARD

WHO WILL BE CHOSEN TO CREATE NEW YORK'S MOMA OF THE FUTURE?

When New York City's Museum of Modern Art (MoMA) announced it had purchased the adjacent Dorset Hotel in February 1996, the implications were far-reaching. The acquisition wasn't just for another expansion, said Terence Riley, MoMA's chief curator of architecture and design, but as part of a reconceptualization of the "new" Museum of Modern Art, including a redesign of "the entire ensemble of buildings" on the museum campus.

A lot more is at stake than which firm will be awarded one of the decade's highest-profile architectural projects. Museum officials are keenly aware that the redesign will not only define the concept of the modern museum of the future but will influence the direction of Modernist architecture as well.

Who will be chosen to create the modern museum of the future will be determined this fall, but whoever it is won't be one of Modern architecture's likely suspects. After a year-long selection process, museum trustees deliberately skipped over so-called superstar architects like Peter Eisenman, Norman Foster, Richard Meier, Frank Gehry, and Charles Gwathmey in pursuit of "innovation and surprise," Riley said. "This will be the first major museum to be completed in the 21st century," he explained, "so there was a deliberate attempt to seek out the leading architects of the next century."

The list includes two architects from the Netherlands, Wiel Arets and Rem Koolhaas; two from Japan, Toyo Ito and Yoshio Taniguchi; one from France, Dominique Perrault; one firm from Switzerland, Jacques Herzog and Pierre de Meuron; and four from New York, Steven Holl, Bernard Tschumi, Rafael Vinoly, and the team of Tod Williams and Billie Tsien. All have handled major commissions and all have won acclaim, and this group is considered by the trustees to be on the rise.

"Overall, the reaction to the decision to go with this group of architects has been very positive," Riley claimed. "Our position from day one was to support Modern architecture, and we're now in a unique position to redemonstrate it," he said. "We wanted to challenge conventional choices."

The list will be narrowed to three by May. Following evaluation for budget and program compliance and design quality, the selection committee expects to announce the award by 1998, Riley said. Museum officials are hoping that the work will be completed by the turn of the century. *Julie Moline*

CHICAGO BOARD OF TRADE'S NEW FLOOR COULD HOUSE A BOEING 747 **There is an unavoidable comparison between Chicago as the city of broad shoulders and the Chicago Board of Trade's (CBOT) cavernous new financial trading facility which opened last month. Billed as "the largest futures and options trading center in the world," the 65,000 sq-ft, 62-ft-high trading floor—large enough to accommodate a Boeing 747—is linked to the CBOT's existing 23-story facility, making a vast contiguous trading floor of 95,000 sq ft, again the world's largest. The building floor has a sophisticated-ed electronic-order routing system, wall displays with twice as many characters as before, 27,000 miles of LVC cable, and concurrent use of 20,000 electronic devices.**



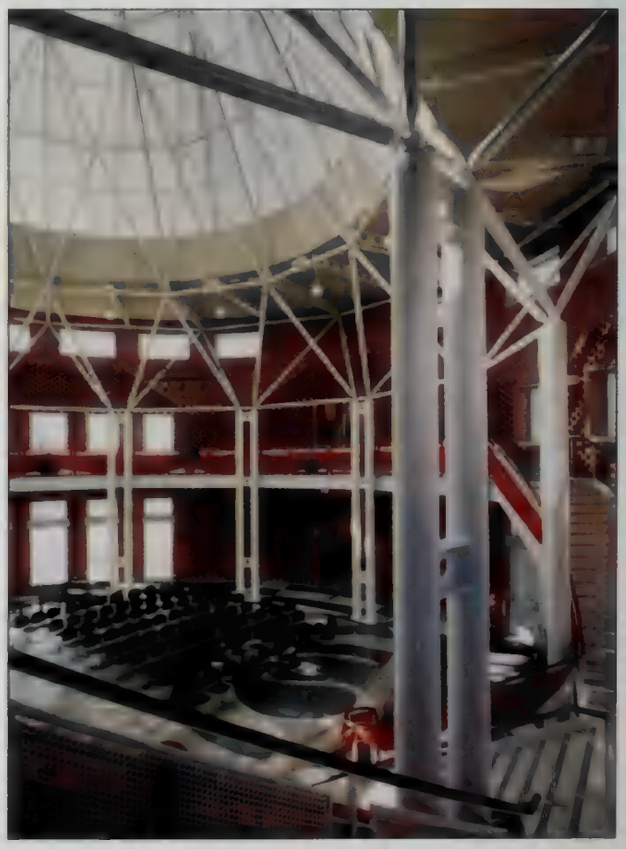
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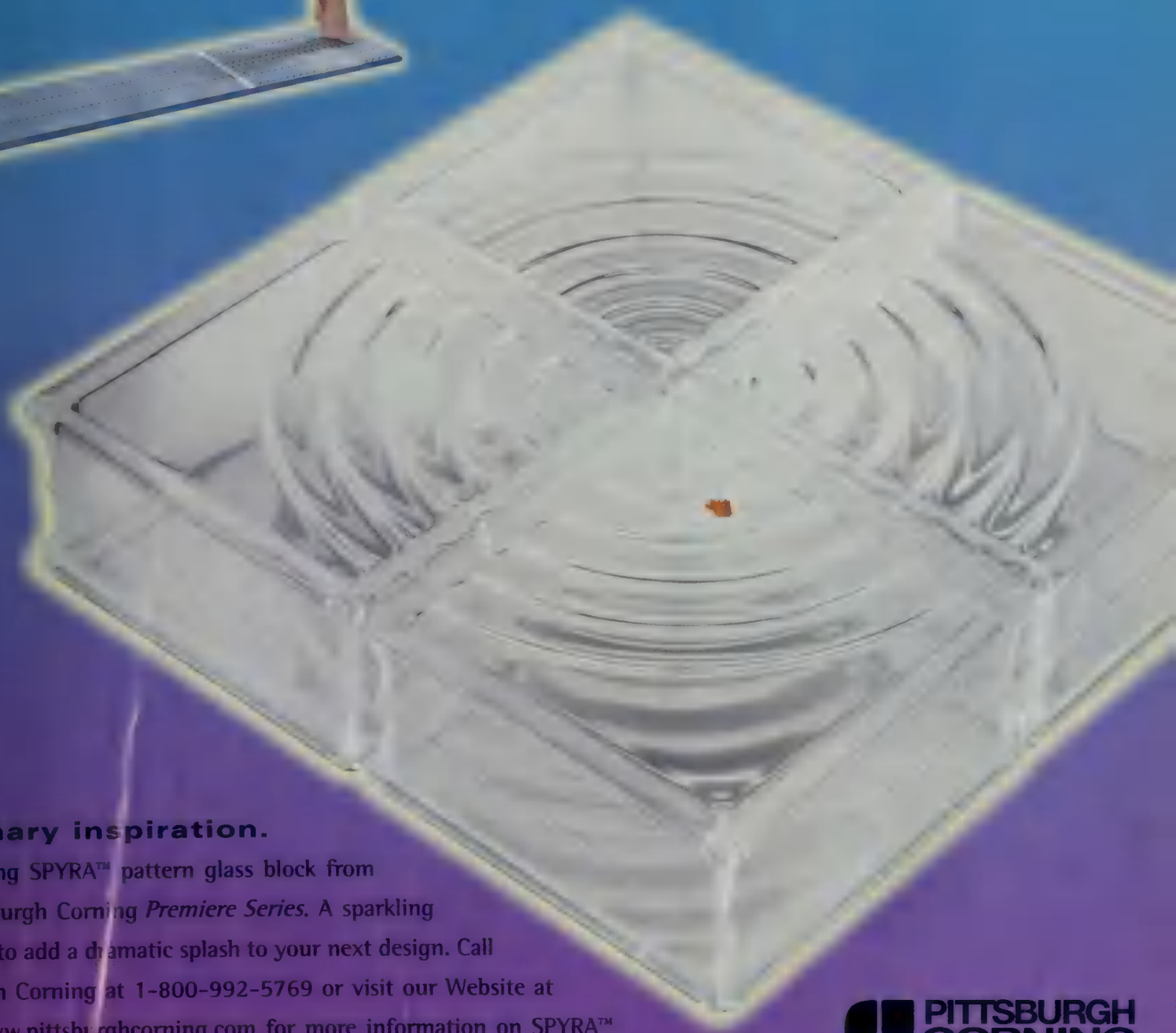


Chicago State University, Rotunda Hall
Harry Weese & Associates, Architects
Photo by Hedrich Blessing, A/D Firefilm on steel Columns

CIRCLE 150 ON INQUIRY CARD

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PITTSBURGH CORNING GLASS BLOCK

NEWS BRIEFS

U.S. Architect may design U.K.'s Hall of History Joel Levinson Associates of Philadelphia has received preliminary approval from the Millennium Commission in the United Kingdom to create a $120 million complex called the Avenue of British History to be opened in 2001 as part of that country's millennium celebration. The project, to be financed by a lottery fund, calls for the start of a new tradition in the form of a Hall of History that will be constructed every 25 years capturing the events of that period in permanent exhibits.

Wolf Foundation $100,000 winners Two pioneers of Modern European architecture have been named Wolf Prize laureates in Arts and Architecture for 1997. Aldo van Eyck of Amsterdam who founded the School of Structural Rationalism in the Netherlands, and Professor Frei Otto of Saxony, Germany, who designed two unprecedented, large cable-suspended roofs at the Olympic Stadium in Munich and for the German Pavilion at the Montreal Expo in 1967. The two architects will share the Israeli-based Wolf Foundation award to be presented April 6 by President Ezer Weizman at the Knesset in Jerusalem.



Tenderloin Community School in San Francisco.

AIA plans big TV campaign A $2.5 million TV ad campaign is being planned by the AIA "to promote the value of AIA-member architects to millions of U.S. households." The plan calls for commercials to run nationally starting in March, 1998 on such programs as "Good Morning America," "Today," and "Larry King Live." The AIA plans to raise money for the TV campaign by asking the membership to approve new funding at its May national convention. Members will be asked to contribute $50 per year for three years.

New inner-city school for San Francisco Architects Joseph Esherick and Jennifer Devlin of Esherick Homsey Dodge & Davis, in association with architects Barcelon & Jang, the San Francisco Unified School District, and grass roots community group Bay Area Women's and Children's Center, have designed the $11.6 million 66,800-sq-ft Tenderloin Community School, the first elementary school and community center in San Francisco's inner-city Tenderloin district. The facility will serve 540 elementary school students and include a day care center, medical and dental facilities, counseling rooms, an adult education center, and a parking garage on a tight urban site. Playgrounds and a community garden are placed on several roof areas.

AIA Young Architect Citation Winners The AIA Young Architect Citation recipients for 1997 are William J. Carpenter of Marietta, Ga.,

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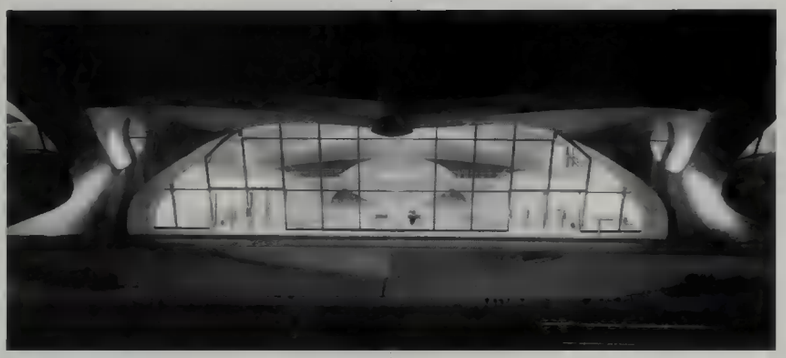
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an associate professor at Southern Polytechnic State University; Michael A. Fischer of Duluth, Minn., project/manager/design with LHJB Engineers & Architects; Robert S. Rothman, Minneapolis, senior project designer, architect, and senior associate at Hammel Green and Abrahamson, Inc.; and Brad Simmons of St. Louis, a principal at Sverdrup Facilities, Inc. The award is given to individuals who in the first 10 years of their career show exceptional leadership in design, education, and service to the profession of architecture.

New Performing Arts Complex for Columbus, Ga. Hardy Holzman Pfeiffer Associates of New York City has completed plans for the $42 million Columbus Performing Arts Complex, which will house the Columbus Symphony, the civic chorale, youth orchestra, boys choir and, at the same time, be home to Columbus State University's performing arts program. The 200,000-sq-ft project is scheduled to be completed in 1999.

Russians interested in U.S. Awards The Russian Society of Architects has cabled the AIA to submit entries to the *Business Week/Architectural Record* Awards competition. The awards, sponsored by AIA, recognize the collaboration between architects and clients who utilize good design in achieving business objectives. For information, call toll-free 888-242-4240.

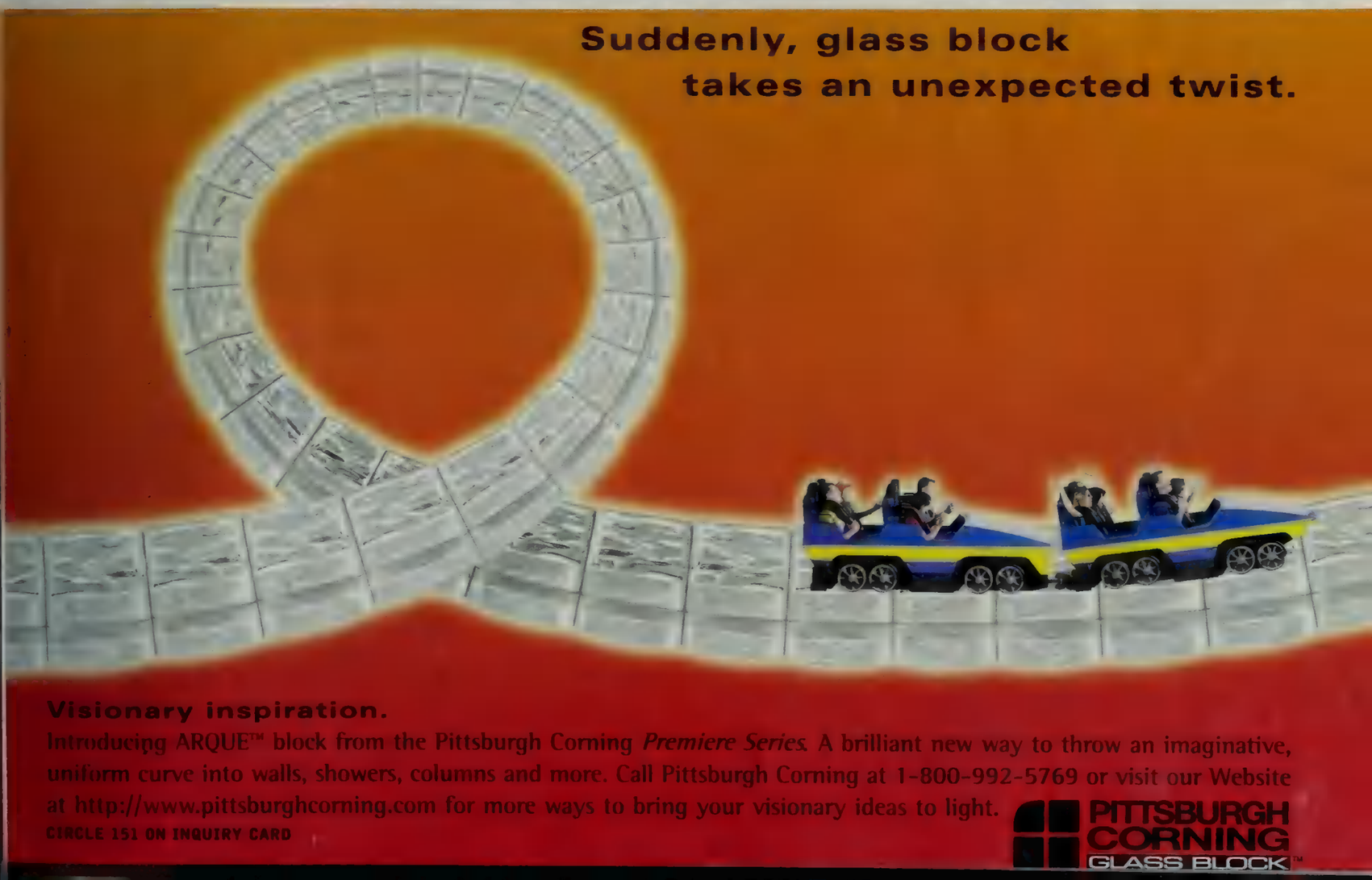
Southern Cal. Institute's practice/research center The Southern California Institute of Architecture (SCI-Arc) has formed the City Practice+Research Center (CPR) to seek and review community programs and implement them as part of the SCI-Arc curriculum. CPR curriculum projects include People With AIDS Housing and a healing garden at the Veterans Administration hospital in West Los Angeles.

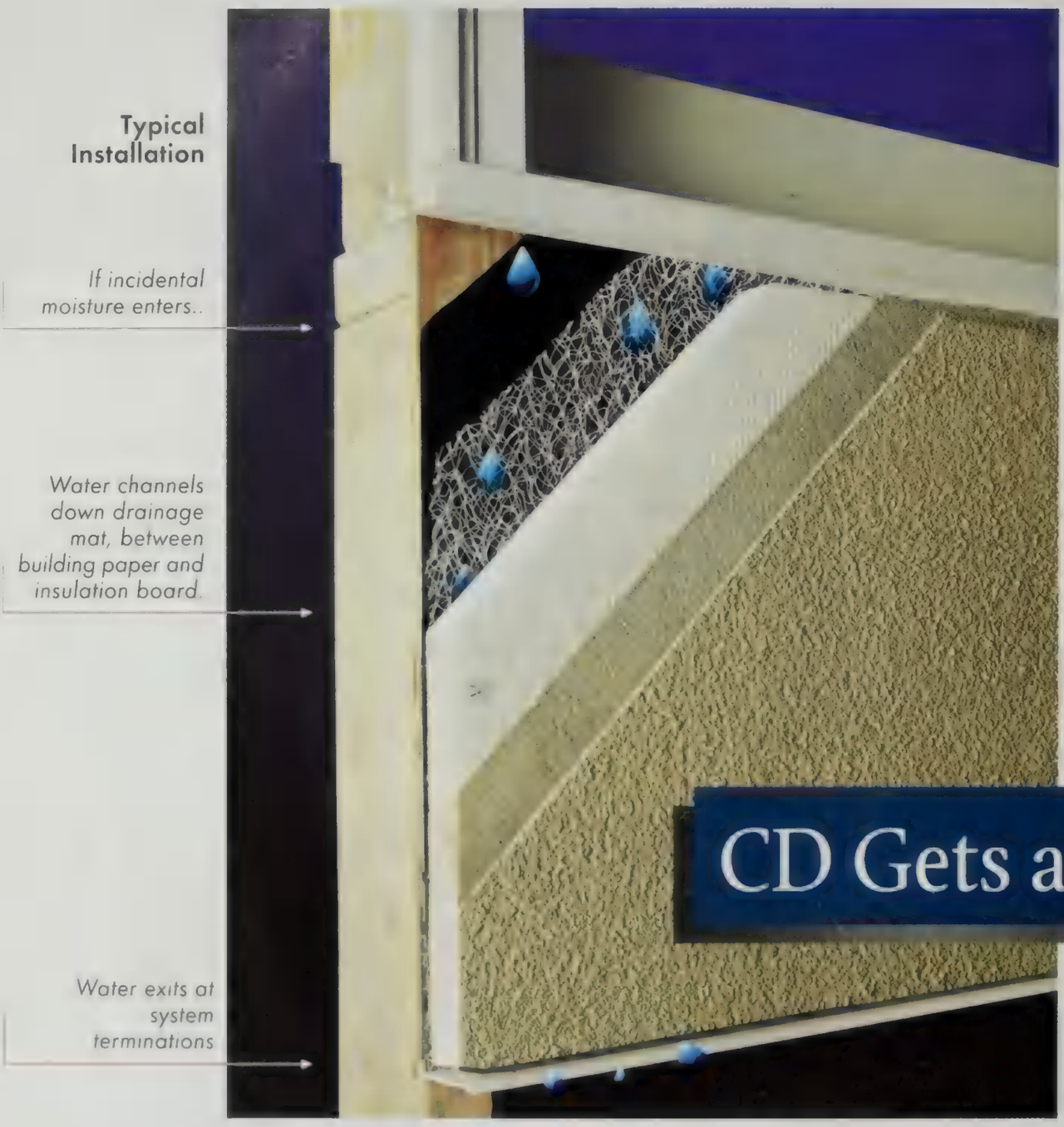


TWA Terminal, JFK Airport, photo by Ezra Stoller

Ezra Stoller's Show, March 12-April 12, 1997 Trained as an architect, Ezra Stoller began taking pictures to earn money while attending New York University. He went on to photograph most of the major works of Modern architecture in America. Art historian William Saunders praised his work's "clarity, sobriety, simplicity, and sharpness." The show at the James Danziger Studio, 130 Prince St., New York City, will feature 30 photographs. Stoller, 82 and now retired, will attend the opening.

Minneapolis wins community awards competition Minneapolis, working with the AIA, won the $10,000 grand prize awarded by the National Organization on Disability/United Parcel Service Community Awards competition which recognizes outstanding local initiatives and actions that expand the participation of citizens with disabilities. Alan Reich, president of N.O.D said, "...the citizens of Minneapolis carried out an exemplary program of cooperation with the American Institute of Architects that is a model for other cities and counties nationwide."





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27. Dimension styles are more flexible and easier to create.
28. Override feature allows you to change properties on a per-dimension basis.
29. Geometric tolerancing creates and edits tolerance control frames automatically.
43. The ability to create and use custom linetypes with text and shapes.
44. Assign linetype scale factors per object (versus per drawing).
45. ISO Compliance of linetypes.
46. DDMODIFY has been dramatically improved.
47. Direct Distance Entry eliminates laborious coordinate keyboard entry; allows you to move the mouse in desired direction and enter a single distance value.
48. Object snap now snaps to extended intersections.
49. Running object snap dialog box is now transparent.
50. New Apparent Intersection snaps to display intersections regardless of the object's UCS.
63. Boundary edges don't need to physically cross the objects you wish to Extend.
64. Grab all visible objects as boundary edges by hitting enter at the first EXTEND prompt.
65. Lengthen or shorten a line or arc to a specific length with the new LENGTHEN command.
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67. The Xref command now searches the AutoCAD path to find referenced drawings.
68. Purge your drawing at any time.
69. Easy to create construction lines that extend infinitely in both directions (XLINE).
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For all those who have "Can AutoCAD Release 13 really make

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11. Create stacked fractions for better readability.
12. Single-line MTEXT editor for DOS users.
13. Map slower fonts to faster ones (FONTMAP)
14. Fill in text fonts (TEXTFILL)
15. Font Substitution during file open simplifies drawing transfer and font changes (FONTALT)
16. Move, rotate, erase, copy, mirror, stretch, or scale each text object.
17. Automatically stack fractions in dimensions.
18. Inferred linear dimensioning automatically distinguishes between horizontal and vertical dimensions and repositions text.
19. Creating dimensions requires fewer steps.
20. Dimension Style Families allow you to define dimension
30. Easier to modify dimensions.
31. Dimensioning has its own units settings.
32. Create splined leader lines.
33. Create multiple lines of text in leaders.
34. Automatic island detection finds a complete boundary with one pick.
35. Associative hatching automatically updates hatch to modified boundaries.
36. The restructured BHatch dialog box is simpler and faster to use.
37. Drive the BHATCH command from the command prompt if desired to run scripts.
38. Create a hatch boundary manually on the fly.
39. Easily edit hatch properties without redrafting the hatch.
40. New ISO compliant hatch patterns included.
41. Load linetypes from within the Layer dialog box.
42. Visual representation of linetypes for selection before loading.
51. New FROM object snap can reference a point from within a command.
52. Object Cycling insures that you select the correct object every time.
53. Improved Fillet command can be used to cap parallel lines.
54. Fillet between a line and a polyline.
55. Fillet without trimming the existing geometry.
56. Fillet that doesn't cancel when you miss the object.
57. Chamfer by length and angle.
58. Chamfer without trimming the existing geometry.
59. UCS restrictions are gone for fillet and chamfer commands.
60. Trim using cutting edges that don't physically cross the objects to trim (implied edge).
61. Cutting edges don't need to be on the same UCS as the objects you're trimming.
62. Grab all visible objects as cutting edges by hitting enter at the first TRIM prompt (two less steps).
71. Group objects together by name with object grouping (GROUP).
72. Draw multiple parallel lines using a variety of linetypes and colors (MLINE).
73. Intersection clean-up for multiple parallel lines simplifies wall creation.
74. Save multiple MLINE styles for quick access.
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102. Standard Toolbar contains icons for high-usage drawing management and drawing editor navigation functions.
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136. CD-ROM installation is faster, easier.
137. Multiplatform license includes DOS, Windows 3.1x, Windows NT and Windows 95
138. Typical, Custom or Minimum install options.
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140. No more ACAD.PWD file.
141. The ability to turn off the automatic Backup files.
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144. AutoCAD SQL Environment (ASE) allows access to data from external database management systems, including SQL2, ODBC 2.0, Informix (DOS), Oracle (Win 3.1/NT).
145. Read drawing files created in previous AutoCAD releases.
146. Save as a Release 12 drawing file.
147. ARX (object-oriented development platform) allows for tighter integration with 3rd party software.
148. Broad peripheral support.
149. Undo support for external database links and operations.
150. Output to STL format.
151. Xref and Block support for non-graphic links.
152. ASI access to ASE link mechanism.
153. ASILISP contains new LISP functions for accessing external databases.
154. Optimized for 32-bit Windows operating environments, resulting in 20%+ increase in performance over 16-bit Windows 3.1x.
155. WHIP driver (High Performance Driver for Windows) increases performance, including near instantaneous redraws.
156. Real-time Pan.
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158. Incremental saving of the drawing file.
159. Faster regens due to more drawing data stored in memory during working session.
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161. Optimized output on selected Windows system printer drivers.
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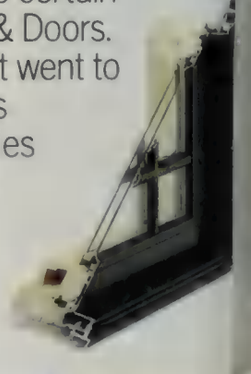


He won the Daytona 500 in 1967. The Indianapolis 500 in 1969. The Formula One World Championship in 1978. In his 36-year career, Mario Andretti has raced nearly everywhere in the world that has a racetrack and won nearly every title there is to win. So when he and his wife began planning the new home they wanted to build, Mario had some very definite ideas about how it should look. He wanted it to echo the beauty and grace of a French chateau, the sturdy timelessness of an Italian villa, the functionality of a typical American home. In short, he wanted a home that would not only reflect all that he had done, but all that he had seen.

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Old photograph of cars on the roof-top test track (below) helped make Lingotto an icon of industrial Modernism. Early sketch by Renzo Piano (left) shows the architect getting a feel for the dimensions of the existing building and for its straightforward grid. From the start of his involvement in the project in late 1982, Piano wanted to weave green spaces into and around the imposing factory. The architect's initial approach was to create parks on the two long sides of the site, which would seem to flow through the building in the form of landscaped courtyards.

PROJECT DIARY: How Renzo Piano turned Fiat's LINGOTTO FACTORY, a Modern industrial icon, into the embodiment of changing times.



Le Corbusier sang its praises in his 1923 Modernist manifesto Vers une Architecture, *showing photographs of sports cars zipping around its roof-top test track. Generations of architects around the world, weaned on Corbu, saw it as an icon of industrial Modernism. In Turin, it was a different kind of symbol. The embodiment of Fiat, the biggest employer in town, it elicited conflicting emotions toward the industrial workplace—depending on whether you labored on its giant assembly lines or reaped the profits of such labor. But from the moment it was completed and even after it was closed as a factory, the Lingotto complex has been much more than just a set of buildings. Converting the 1,673-ft-long main structure into something very different from a factory, while respecting the character of the original architecture and perhaps creating a symbol for a new era, was the great challenge of this project. Not surprisingly, this transformation was long and complex. In fact, it is still underway.*

by Clifford Pearson

HISTORY

Between 1917 and 1920, civil engineer Giacomo Mattè Trucco designed and supervised construction of Lingotto, Fiat's first large car factory. Taking its name from the area on the outskirts of Turin in which it was built, the giant project featured a main building that was five stories high, ran 1,673 ft long and 80 ft wide, and wrapped around four courtyards. The design of the factory was inspired by the early multistoried plants that Albert Kahn designed for Ford in Detroit, which Fiat's founder V.G. Agnelli saw on a trip to the United States in 1912. Lingotto wedded the horizontality of the assembly line to a vertical process of manufacturing: Each major step in the construction of a car took place on a progressively higher floor until the finished product was tested on the roof track and then driven down one of two ramps to the ground.

An office building, the palazzina, was erected in front of the factory and ancillary buildings were added to the complex over the years. Running along the factory's west facade was the railroad. On the east side, residential neighborhoods developed over time, bringing the city of Turin to its doorsteps. At its peak, 12,000 people worked at Lingotto.

In the 1950's, Fiat built factories in the Mirafiori area of Turin, making Lingotto an ancillary facility. About the same time, Fiat moved its executive offices from the palazzina at Lingotto to downtown Turin.

By 1982, new robotic technology and team approaches to manufacturing made the long assembly lines of Lingotto obsolete, forcing it to close. The last car to come off the factory's floor was a Lancia Delta.

1982-88

Fiat invites 20 prominent architects to propose new uses and conversion strategies for Lingotto. The list of architects includes Aldo Rossi, James Stirling, Richard Meier, Hans Hollein, Cesar Pelli, Gaetano Pesce, Gae Aulenti, Lawrence Halprin, Ettore Sottsass, Gottfried Bohm, and Renzo Piano. Most of the architects propose single uses for the 2.7-million-sq-ft building, such as an automobile museum, railway station, or hotel.

Piano's proposal stands out for its vision of a multi-use, public-oriented complex where tensile roofs float above courtyard gardens. "The metaphor I use is of a city," says Piano. "There is a mix of functions. We added streets and a piazza. And like the best cities, we tried to create surprises," explains the architect. "We wanted to create a city within a city" that would include shops, offices, a hotel, a university, incubator space for start-up companies, exhibit space for trade fairs, and public parks, says Shunji Ishida, one of Piano's senior associates for the past 25 years. The architects also want to integrate Lingotto with the rest of Turin, by creat-

Project: *Lingotto Factory Rehabilitation, Turin, Italy*
Architect: *Renzo Piano Building Workshop—Renzo Piano, principal-in-charge; S. Ishida, associate architect; M. Carroll, architect-in-charge (bubble); M. Varratta, architect-in-charge (concert hall); M. Cattaneo, S. Scarabicchi, R.V. Truffelli, D. Magnano, D. Piano, design team*
Engineers: *Ove Arup & Partners (structural and M/E, concept design); A. I. Engineering and Fiat Engineering (structural, final design)*
Consultants: *Müller Bbm (acoustics); Arup Acoustics (acoustics); Techplan (theater); Studio Vittone (concert hall foundations); P. Castiglioni (lighting); P.L. Cerri (graphics)*
Builders: *Del Favero, Maltauro, Aster*

ing uses that would attract residents to visit on a regular basis.

All 20 proposals are exhibited in spring 1984 and in an unofficial vote a majority of visitors favor Piano's plan. One of the big question marks hanging over the project, though, is whether a revamped Lingotto can, in fact, become an integrated part of Turin, after so many decades of being a fortress of work isolated by rail yards and industrial grit. "It's not easy changing the image of a place as big as this," says Venanzio Truffelli, a Piano associate who worked on Lingotto for many years.

In 1986 Fiat asks Piano to work with an economist and a sociologist to develop a feasibility study for the project. The study endorses Piano's original mixed-use approach, focusing on the trade fair and conference components as two of the first to be built.

Starting in 1986, the project moves through a labyrinthian approval process to change the building from manufacturing to multipurpose use. Finally, in 1988 Fiat gets the okay and organizes the Lingotto Society, a public-private partnership that will take over the direction of the complex. The Society includes Fiat, the city of Turin, Italian Railways, three major banks, and two insurance companies.

1988-92 Even as Piano's office moves forward on design development, debate continues on the project's future. How to proceed, how fast to proceed, and how much money would be needed are all issues under discussion. According to one source, there are times when the project's future is in doubt.

"What pushed the project forward was the realization that this was just too important," explains Andrea Ranghieri, a public relations official with Expo 2000 Spa, the company that runs the trade fair and conference components of Lingotto today, and a spokesperson for Fiat during much of Lingotto's development. "Lingotto was just too important to Fiat's history and too important to the city of Turin as an economic development project," says Ranghieri.

There is also the realization that not going forward with Lingotto, especially its trade fair component, would have its costs, too. The Turin Book Fair and the annual automobile show have outgrown the city's existing exhibit center and might leave if a larger facility isn't built.

Finally, there is the realization that Lingotto is a rare opportunity to create a new symbol for Turin—one that pushes the city into the 21st century, says Ranghieri.

"The sense of emptiness in the building was terrifying at first," recalls Truffelli. "The most difficult aspect was conquering the scale," adds Daniele Piano, Renzo's son and an architect who has worked on the project. "So we took a pragmatic approach, one piece at a time."

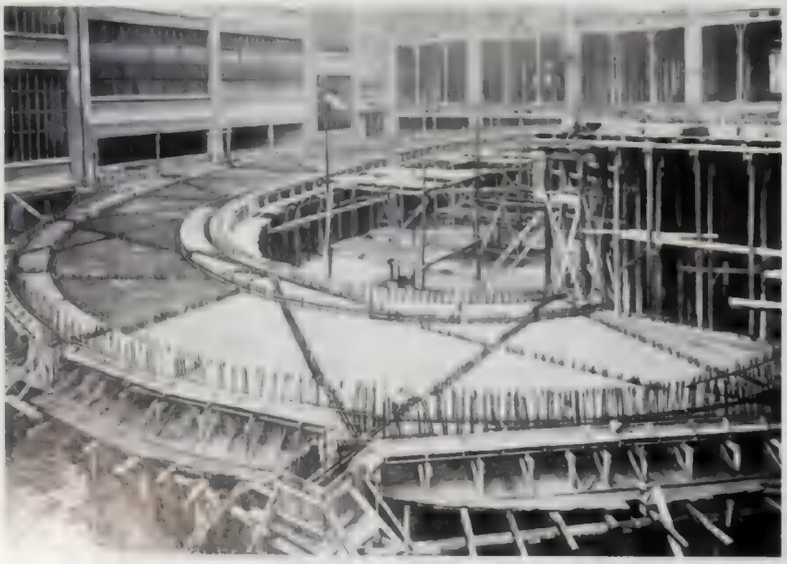
During Lingotto's long history as a factory, a host of ancillary sheds had been added to it, obscuring parts of the main building. To increase the building's presence and its impact as an object in the city, Piano and his Building Workshop decide to tear down many of these small structures, explains Ishida. And by removing the abandoned rail line that once supplied the factory, the architects create the opportunity to practically surround the complex with public open space. Rather than denying or trying to break the monumental scale of the main building (as some other architects had proposed), Piano wants to glorify it. "The dimensions of the building are part of its character and identity," says Truffelli. "We decided to respect that."

The original idea is to create a large public park that would stretch from one side of the site to the other, filtering through the four courtyards within the building. As the design develops, the architects impart different identities to the long open space on the east side and the one on the west—keeping the landscaped park on the west where trains once ran and designing a piazza linking the project to the city on the east.

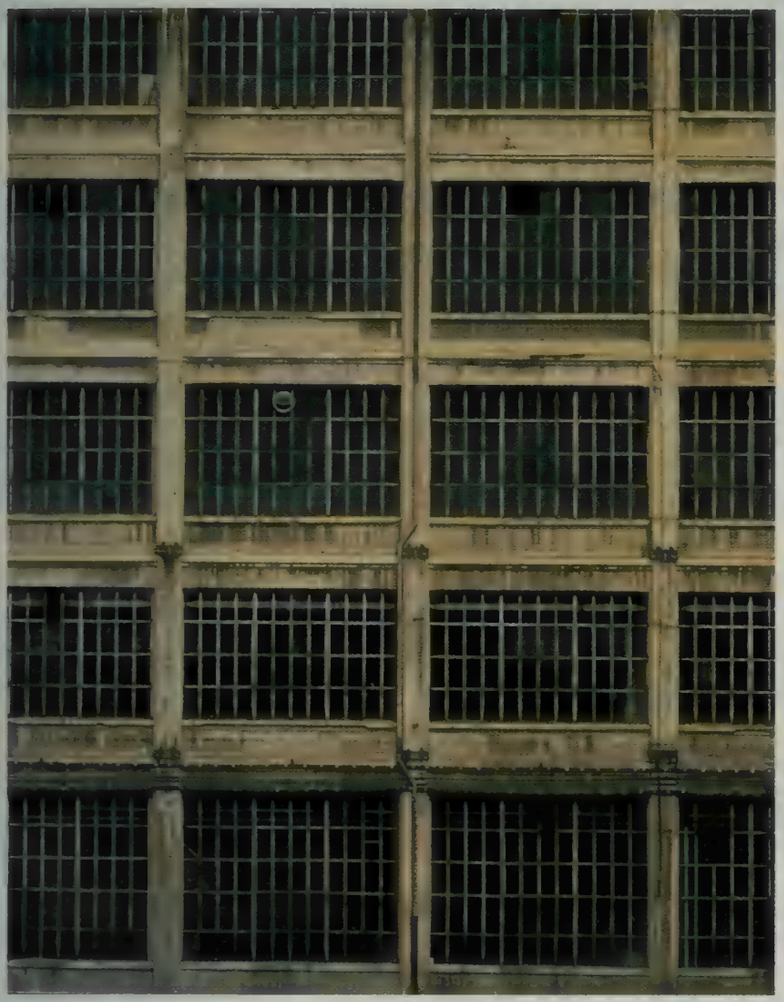
Festooned with tent roofs and a floating elephant, Piano's first scheme for the courtyards and open space at Lingotto recalls the Pop designs of the Archigram group, writes Peter Buchanan in a 1995 monograph on Piano. During design development, these whimsical elements disappear as it becomes clear they don't fit the character of the building.

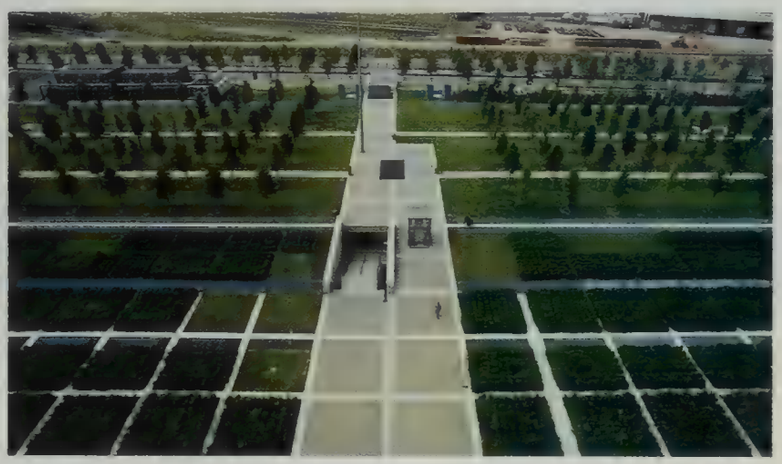
"Renzo decided early on that we wouldn't do a Beaubourg here," says Truffelli, referring to the Pompidou Centre in Paris that Piano designed with Richard Rogers. "We wanted to respect the fabric of the old building and do a low-key conversion." As Piano himself explains, "Because the old building is so formally simple, you must have a light

One of the great ramps of Lingotto being built between 1917 and 1920 (below left). Factory functions took place between the four bays of the poured-concrete structure (below right).









While the building's concrete-frame structure was still in excellent condition when it closed as a factory (left), its stucco surfacing was crumbling in places. Renzo Piano's Building Workshop researched the old type of stucco used, which has a higher sand content and is more textured than today's stucco, and recreated it. The old building's rhythmic 20-by-20-foot structural grid was extended outdoors to organize the landscaping of a new park on the west side of the complex (below). Parking for 3,500 cars is below. Italian Railways has hired Piano to devise a scheme for a swath of land that it owns adjacent to this park.

touch. If you try anything extravagant, you might kill the building."

Lingotto's poured-concrete frame—based on a cube that is 6 meters (19.8 ft) in length, 6 meters in width, and 5 meters (16.5 ft) in height—is still in excellent condition, but its stucco surface is crumbling in many places. So the architects research the old-fashioned stucco and rediscover how to create and apply it.

Using and extending the building's grid is another key element in Piano's design. New openings in the building's fabric—such as entries for the convention and shopping areas and an outdoor corridor wrapping around the courtyards—reveal the grid by carving away portions of it. West of the building, Piano's landscaping brings the grid outdoors, using it as a matrix for planting new trees. "The advantage of working at Lingotto," says Piano, "is you have the discipline: the structure, the grid."

The first public event—an art exhibit entitled "Russian and Soviet Art 1890-1930"—opens at Lingotto in June 1989, offering a hint of things to come. Located in the part of the building that will later be used for trade fairs, the exhibit, which is designed by Piano's office and runs for five months, shows how space in the building can be used. The exhibit is a small, but important, down payment on the complex's future.

The most obvious changes to the building are in its fenestration. Although the windows fit into the old openings, they are clearly new elements with aluminum frames and sun shades stored in bright green rolls. The distinctive green shows up all over the project—in railings, window trim, and other details. "We use the green only in small pieces," says Truffelli. "We want people to remember the color and associate it with the new facility, but we don't want it to be too strong." Creating a certain amount of tension between old and new is one of the architect's goals. But "you must be very subtle," warns Piano. So even the new double-glazed windows are arranged in grids that allude to their predecessors.

To stiffen the large expanses of curtain wall on the ground floor (where the floor-to-floor height is nearly 25 feet), the architects at the Building Workshop design an elegant aluminum column with circular holes running up its length. Set in long galleries in the trade fair area and the hotel, the columns are another carefully detailed element that is even more impressive when it is repeated over and over. "We wanted to keep the spirit of obsessive repetition found in the old building," states Piano.

As Piano and his associates work on the fine points of the architectural vocabulary to be used at Lingotto, they must also grapple with a program that is often in flux. One day cinemas are in; the next day they're out. Years later they return in a different location. The client would like to have the Faculty of Science of the University of Turin anchor one of the four courtyards, but negotiations go on and on. Such uncertainties reinforce the architect's decision to design a repetitive system, an architectural framework flexible enough to accommodate a broad range of uses.

The largest component of the program—the trade exhibition area—is never in doubt. After surveying the sheds at the south end of the main building, the architects decide to remove most of them and build a new 562,000-sq-ft hall. Adjacent to this, a new conference center will be inserted into the old Lingotto building. Underground parking for 3,500 cars will be built on the western part of the site with the park above it.

The highlight of the conference center is a 2,000-seat conference hall that Piano plans to bury under a courtyard. Because Lingotto has no basement, nearly 50 feet of earth needs to be excavated to insert the hall where the architects want it. Although expensive, this (*text continues*)



On the east side of the factory, Piano and his associates tore down some low-rise buildings to create a grand piazza (above) that serves as a welcoming space facing the city. On the west (below), the architects designed a park. Both elevations combine new glazing within the renovated fabric of the old building. To date, the cost of the Lingotto project has been about $450 million, $32 million over the original budget.





THE CLIENT

Initiated by Fiat in 1982, the Lingotto conversion became a joint effort in 1988 when the public-private Lingotto Society was given control of the project. Lingotto shareholders include Fiat, the city of Turin, Italian Railways, three banks, and two insurance companies.

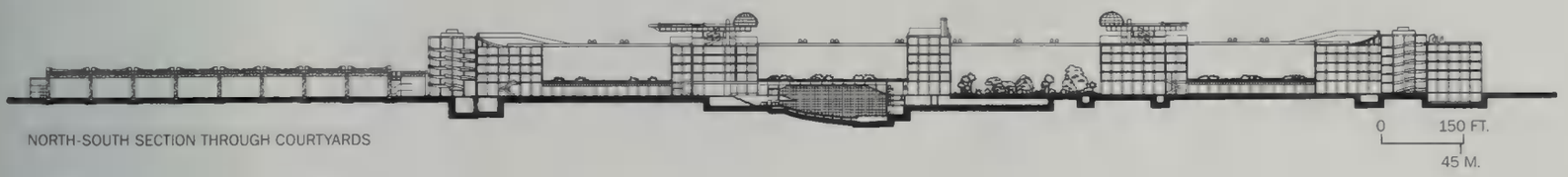
A multi-headed, public-private partnership sounds like every architect's nightmare client. And while disagreements did indeed arise during the process of creating the new Lingotto, what's more remarkable on such a complex project is the degree of agreement between architect and client. In fact, Renzo Piano got along so well with Alberto Giordano, the chief executive officer of the Lingotto Society, that he hired him in 1993 to work for his firm.

What also helped was the support of Giovanni Agnelli, the powerful chairman of Fiat, who saw the project as an opportunity to shape a new forward-looking image for his company and his hometown. Although Agnelli wasn't involved in day-to-day decisions, he was totally committed to the project and could usually be depended on to throw his considerable influence behind decisions that enhanced quality—even if that sometimes meant spending more money. The task of staying close to the project's budget was made easier by corruption scandals in the 1990s that cleaned up the construction industry in Italy and made it more competitive.

Several key decisions by Fiat and the Lingotto Society set the direction the project would take, says Andrea Ranghieri, an executive of Expo 2000 Spa, the company that manages the trade fair portion of the project, and a former spokesman for Fiat. "The first decision was to maintain not just the building itself but the spirit of the old building," states Ranghieri. Next came the decision "not to treat the building as a mausoleum," but to bring new functions to it. The third key point, says Ranghieri, was to take a multi-functional approach—injecting many different activities into the old factory.

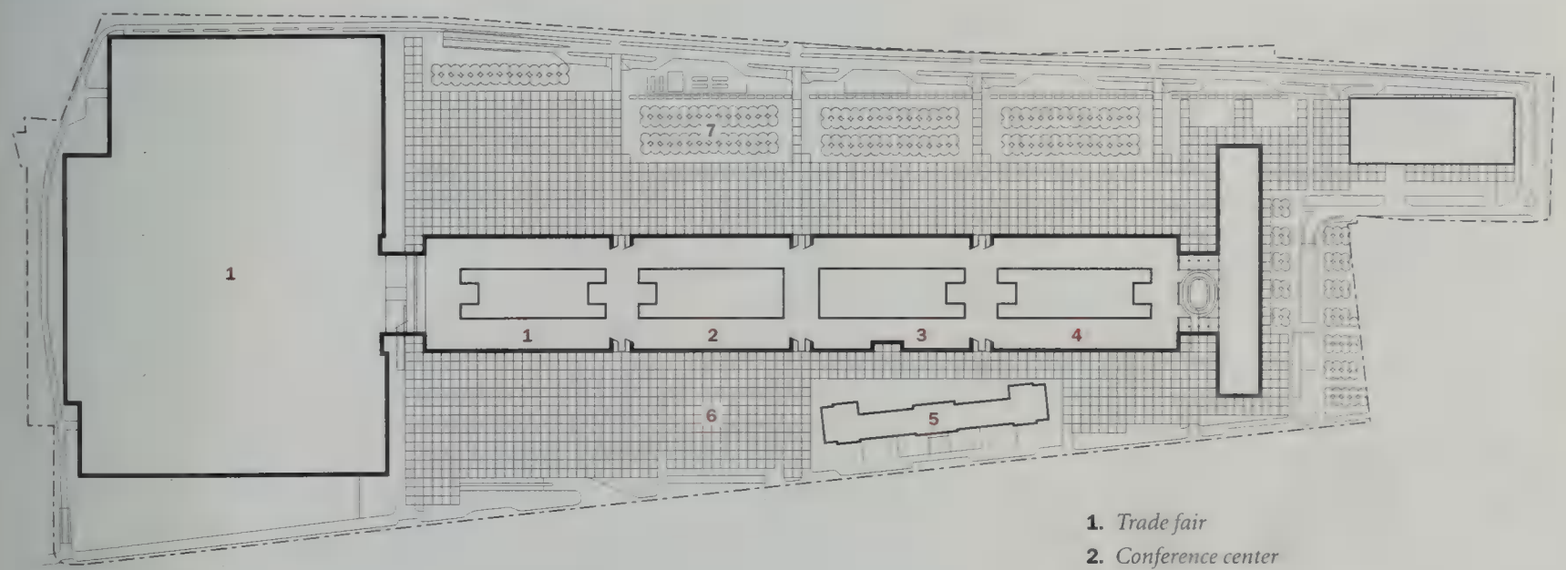
Now that much of the work has been done on the old factory building, Fiat is moving its executive headquarters back to the palazzina at Lingotto (photo left)—a show of faith in the project by its largest shareholder.

For a long time, many people were skeptical of the project. "Not everyone in Turin believed it would happen," admits Ranghieri. Now the task is to change local residents' image of the building—from being a factory to being a destination of choice. Connecting Lingotto to the surrounding city is still a work in progress.



NORTH-SOUTH SECTION THROUGH COURTYARDS

0 150 FT.
45 M.



SITE PLAN → N

1. *Trade fair*
2. *Conference center*
3. *Hotel*
4. *Unfinished*
5. *Palazzina*
6. *Piazza*
7. *Park*



UP CLOSE

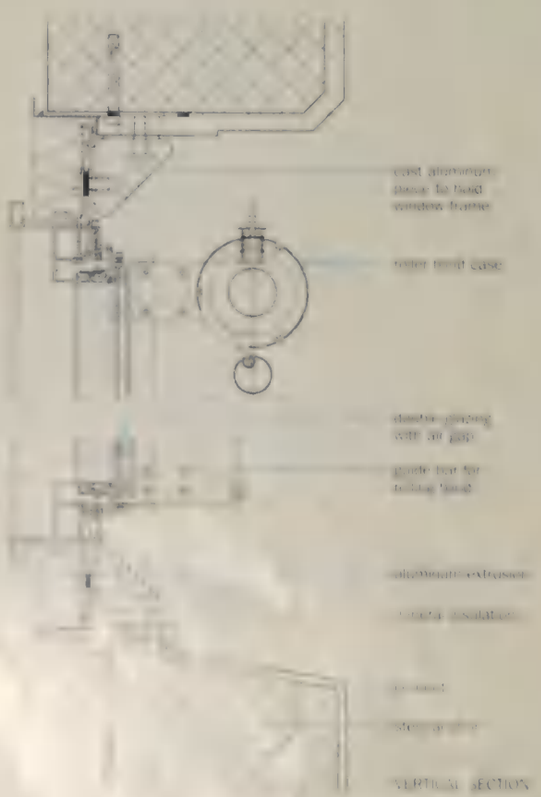
New glazing recalls the old building's grid (left). In the trade fair area (right), it echoes the "obsessive repetition" of the old factory.

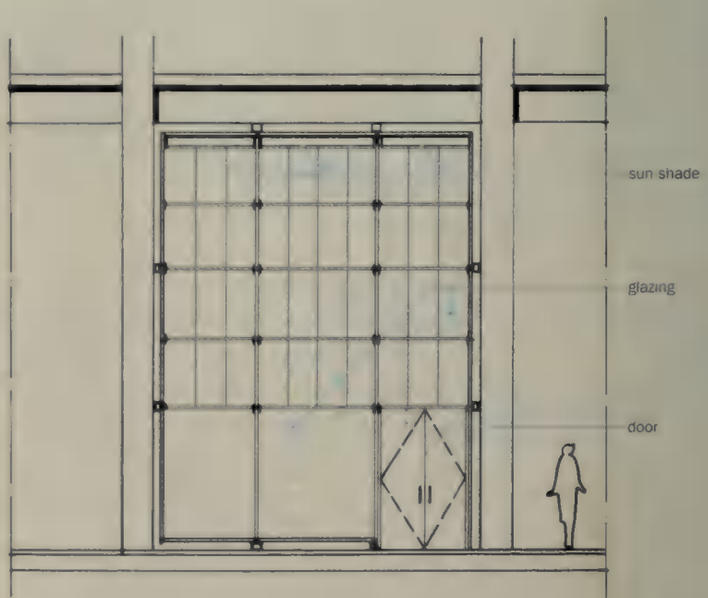
Other than the new piazza in front of the building and the park behind it, the most important changes made to the exterior of Lingotto involved its fenestration. Replacing the old windows with aluminum-frame casement ones, the architects created a new skin inserted just inside the old fabric of the building.

Because the original building is very simple in form and in the expression of its grid, "you have to be very careful," warns Renzo Piano. "If you want to be strong, you need a light touch," he explains. To open the building to the outside and show what's going on inside, Piano kept the glazing clear. For sun protection, he and his associates designed canvas shades stored in bright green rolls at the top of each window (above and drawings below).

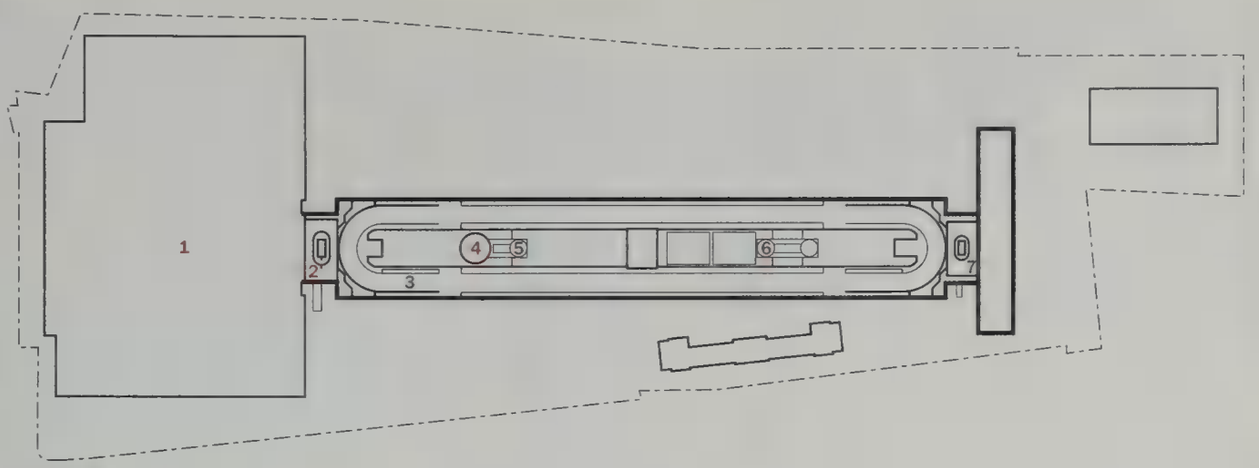
On upper levels, the floor-to-floor height is 16.5 ft, while the ground floor is nearly 25 ft high. To brace the large expanses of glazing on the lower floor, the Building Workshop designed cast-aluminum columns lightened with punched-out holes (right). "The idea was to use simple elements that are subtle from a distance, but can be appreciated as you get closer," says Venanzio Truffelli, one of Piano's associates who worked on the project. While Piano's fenestration is clearly new, it alludes to the old in its grid. In another nod to the past, the architect restored the original windows on one portion of the building—one of the towers crossing the interior courtyard. Not everyone will notice this gesture, but it acts as a subtle link between old and new.





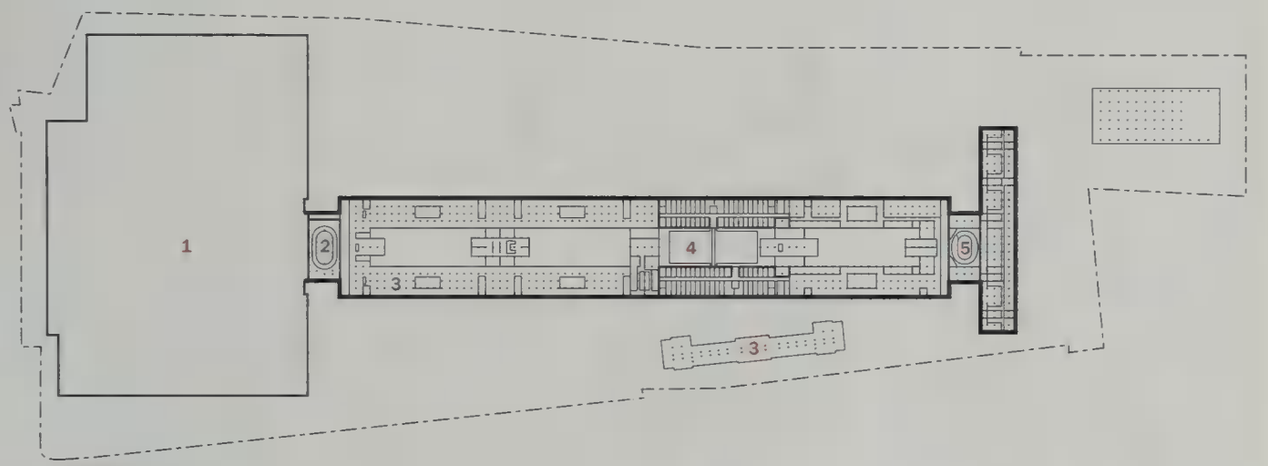


1. *Trade fair (below)*
2. *South ramp*
3. *Test track*
4. *Helipad*
5. *Conference (bubble)*
6. *North bubble (unbuilt)*
7. *North ramp*



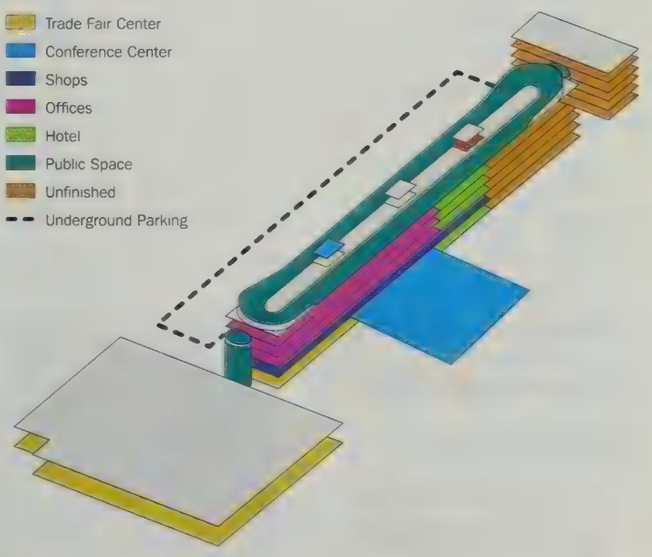
ROOF PLAN → N

1. *Trade fair (below)*
2. *South ramp*
3. *Office*
4. *Hotel*
5. *North ramp*

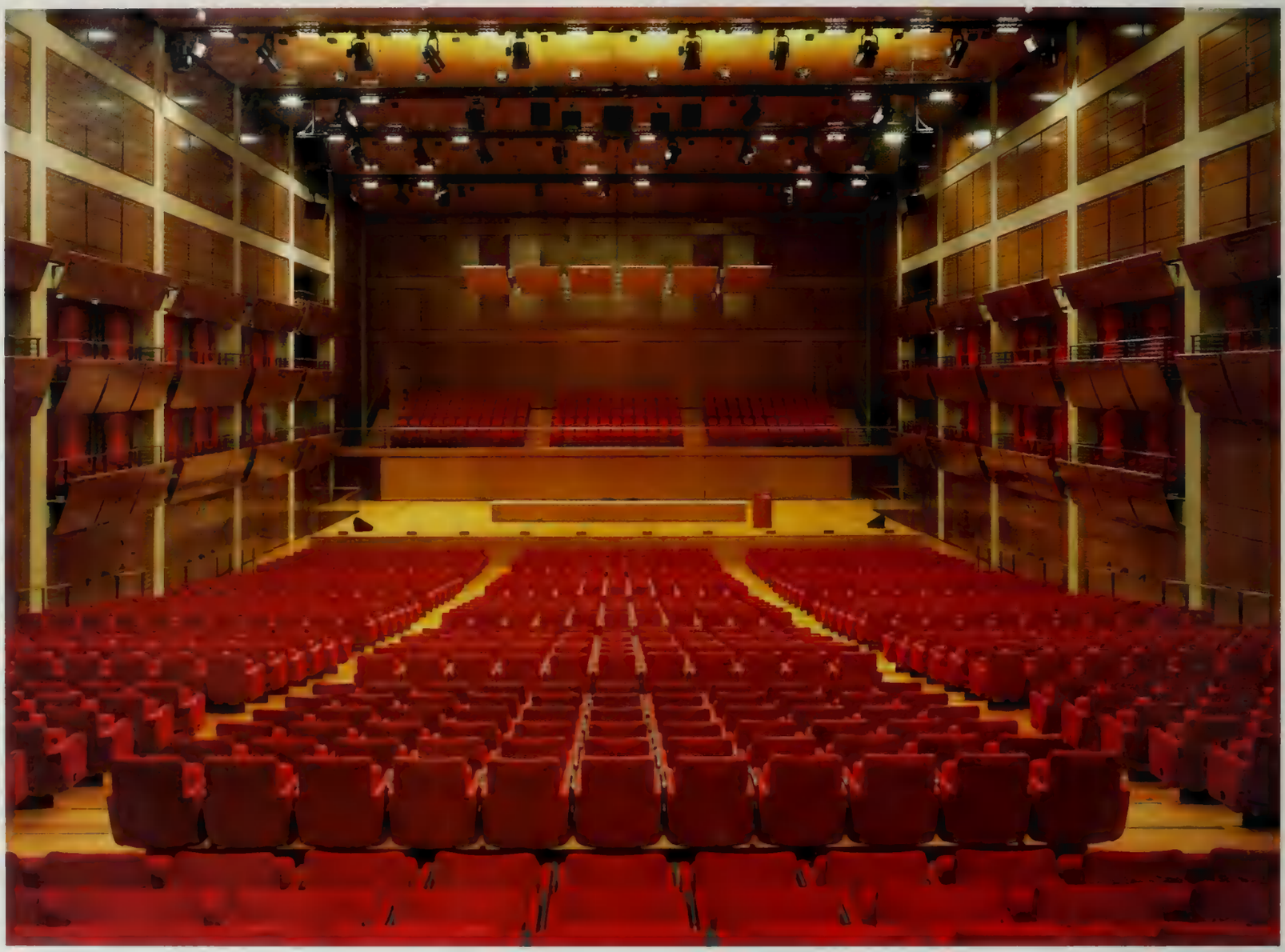


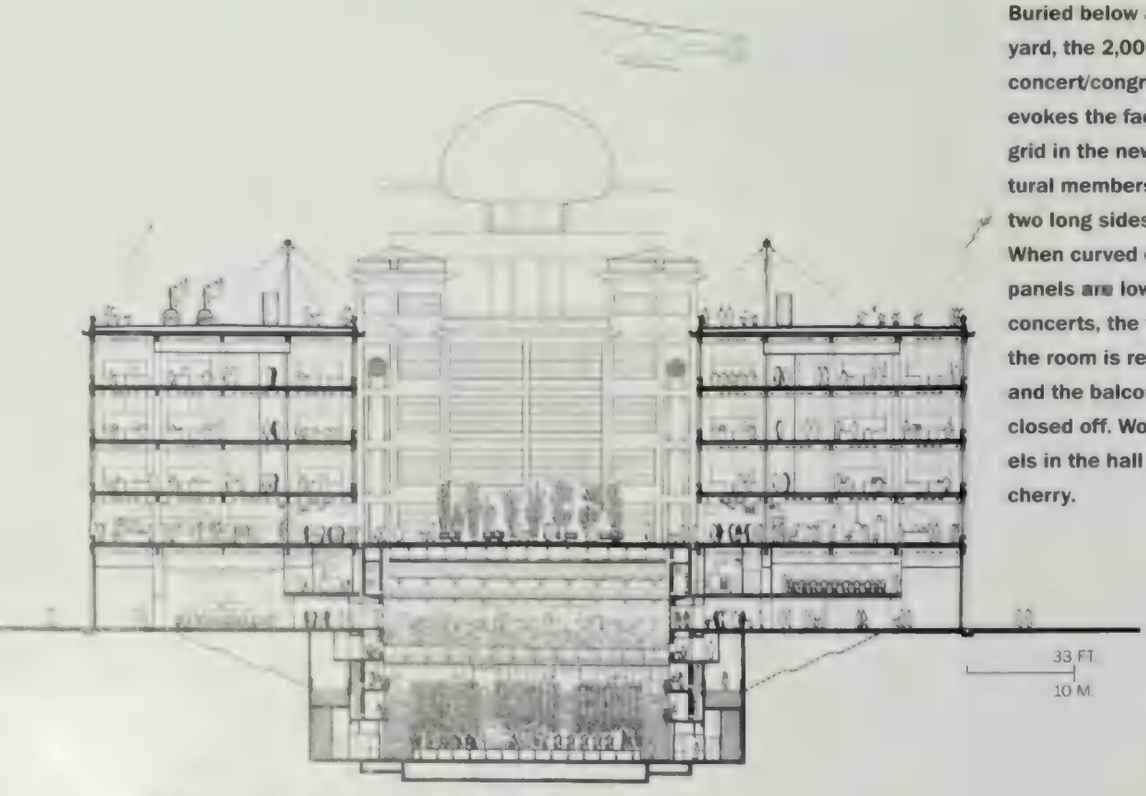
2ND, 3RD AND 4TH FLOOR PLAN



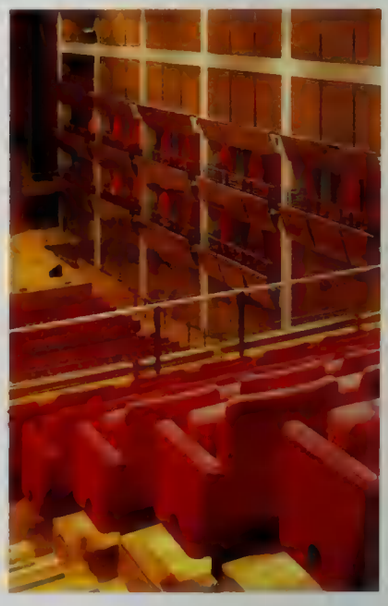


The trade fair area (left) is one of many components inserted into and added onto the old factory (diagram above). Since the uses changed often during development, the architects designed a building system that could accommodate many functions.





Buried below a courtyard, the 2,000-seat concert/congress hall evokes the factory's grid in the new structural members on its two long sides (above). When curved ceiling panels are lowered for concerts, the volume of the room is reduced and the balcony is closed off. Wood panels in the hall are cherry.



CONCERT HALL/CONFERENCE CENTER

approach accommodates the size of the hall and the need for good acoustics.

Piano proposes that the hall be adaptable for both conferences and concerts and devises a scheme in which curved ceiling panels suspended on cables are lowered or raised depending on the function to be accommodated. It is considered a brilliant but expensive design. Some members of the client team resist. But Piano argues that while Italy has a number of world-class opera houses, it has only a few great concert halls. He also believes that the more functions Lingotto can offer, the more it will resemble a true city. Piano finds an ally in Alberto Giordano, the Lingotto Society ceo, and the two of them go about convincing the others.

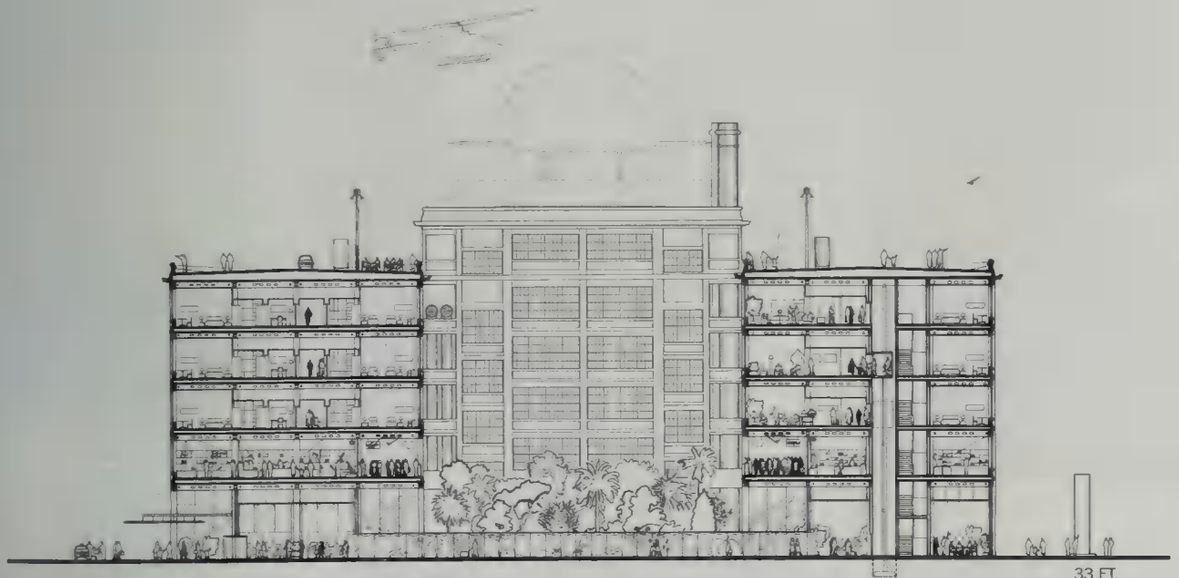
While the basic thrust of Piano's designs is to defer to the fabric of the old building, he knows the project needs a high-profile element to serve as a symbol of the new Lingotto. His idea is to have this element rest gently on the old building, barely touching it. From this line of thought comes a pair of glass "bubbles" hovering above the famous roof-top test track. Each bubble houses a single conference room and one is coupled with a circular helipad. The spherical geometry and the high-tech materials provide a clear break with the rest of Lingotto. Although the bubbles will be expensive to build and maintain, Fiat chairman Giovanni Agnelli recognizes their value as icons of change. The bubbles are approved.

Working with engineer Peter Rice from the London office of Ove Arup & Partners, Piano designs the bubbles so they rest on new towers independent of the old building. Piano and Rice are close friends who have collaborated on projects for nearly 25 years. But at age 57, Rice has cancer and in 1992 he dies. At about this time, Piano takes a new approach to the structures supporting the bubbles. Instead of inserting new towers into the complex, he decides to rest the new elements directly on the old building. (Or what seems to be the old building, since the towers would have to be almost totally rebuilt to carry the extra load.)

1992-97 The trade fair part of the project opens in April of 1992 and quickly becomes a success. By 1997, the facility is booking 37 trade shows a year. The book and automobile shows stay in Turin and new ones are attracted.

In May 1994, the convention center and concert hall open. The adjustable ceiling panels and the boxy shape that brings all seats close to the stage please both audiences and performers. One musician says "it's like playing inside a violin." The quality of the facility is a factor in the Italian National Broadcast Symphony's decision to use Turin as its home.

A business center opens in the tower below the roof-top bubble, providing office space for businesses associated with the conference center. A hotel, wrapping around a courtyard landscaped by Piano as a lush tropical garden, welcomes its first guests in 1994.

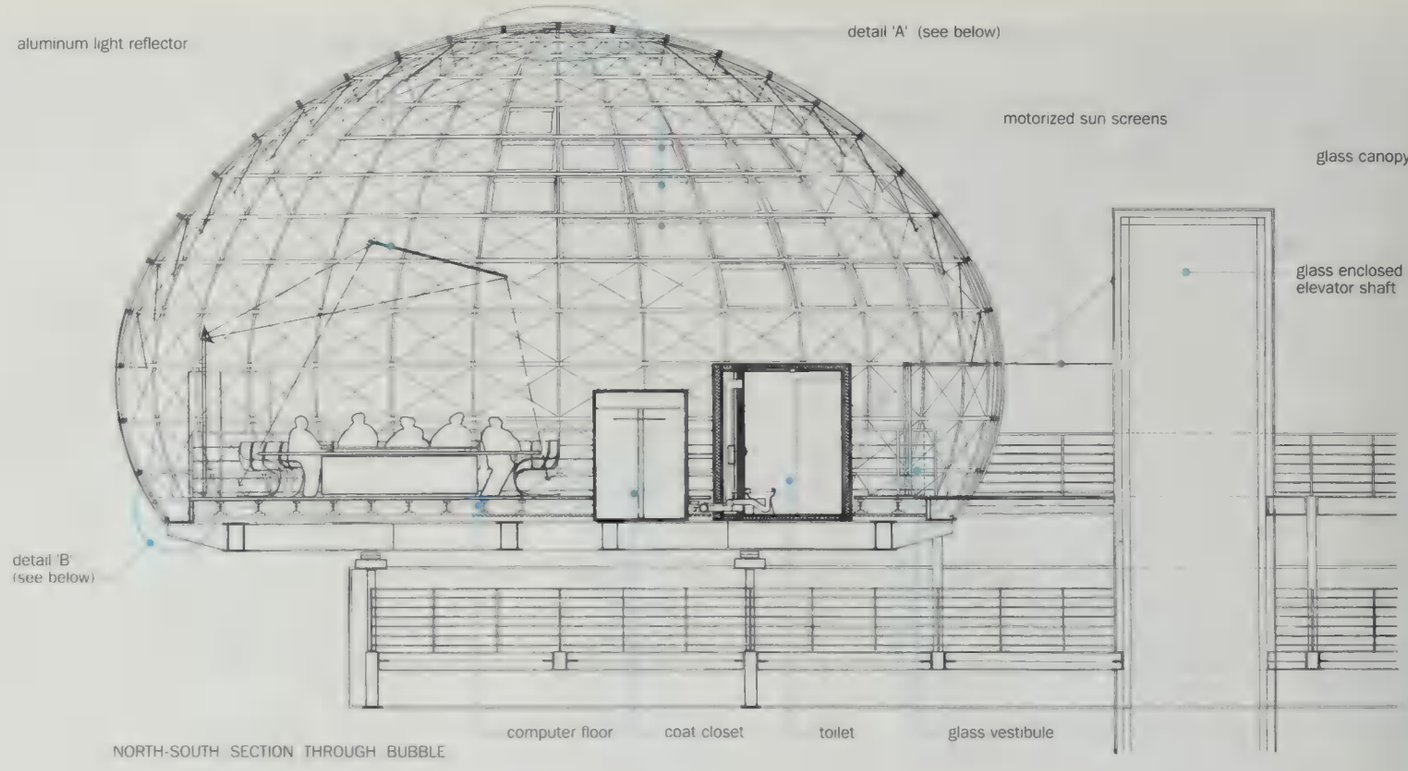


EAST-WEST SECTION THROUGH HOTEL

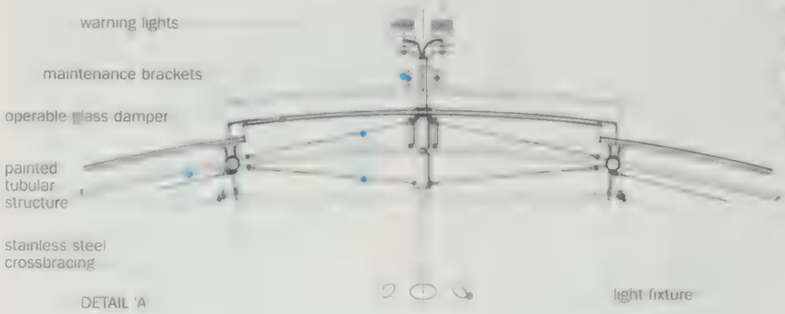




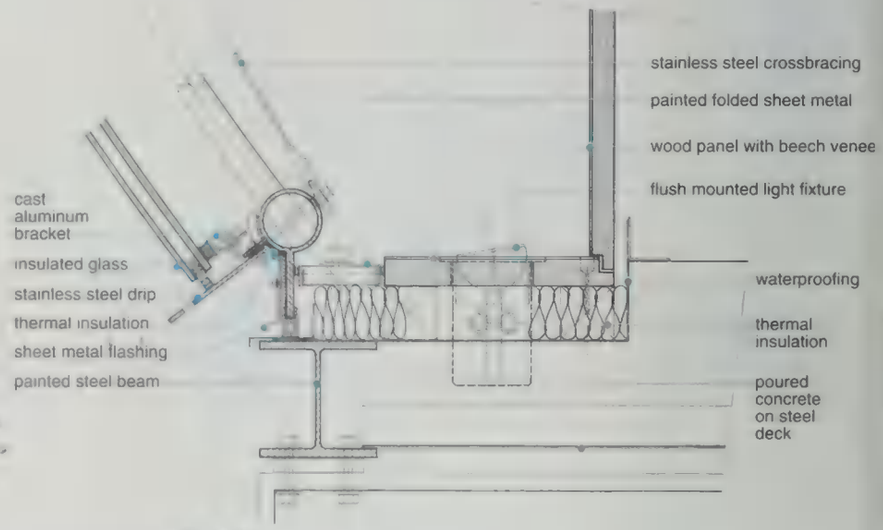
The hotel occupies its own courtyard, which has been landscaped as its own microclimate with a jungle of tropical flora (section left). Slicing through the center of the courtyard and connecting the two sides of the hotel is a glass-enclosed corridor (far left) that provides an elegant contrast between the natural and the man-made. The hotel lobby (left) has 25-ft-high ceilings and is decorated with the original drawings executed in 1982 by the 20 architects asked by Fiat to propose new uses for the Lingotto factory.



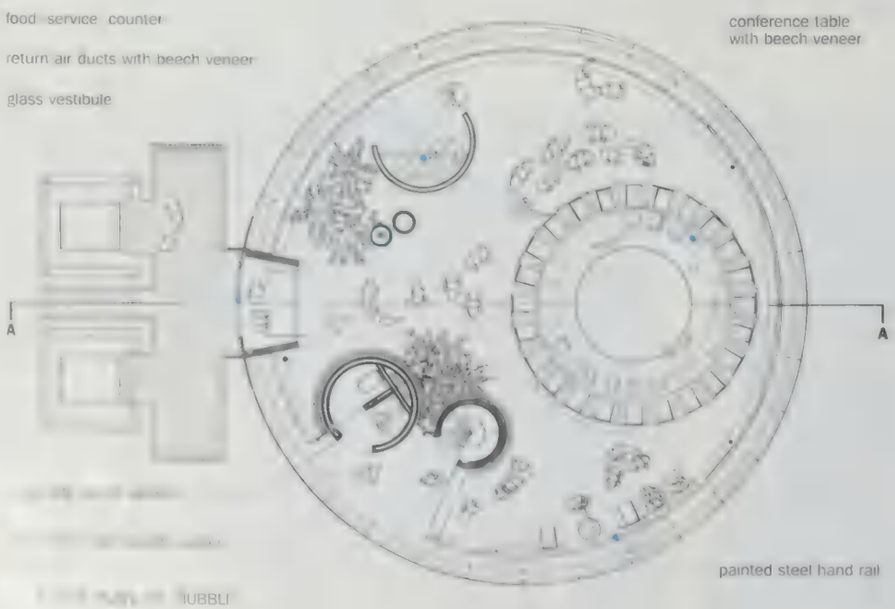
NORTH-SOUTH SECTION THROUGH BUBBLE



DETAIL 'A'

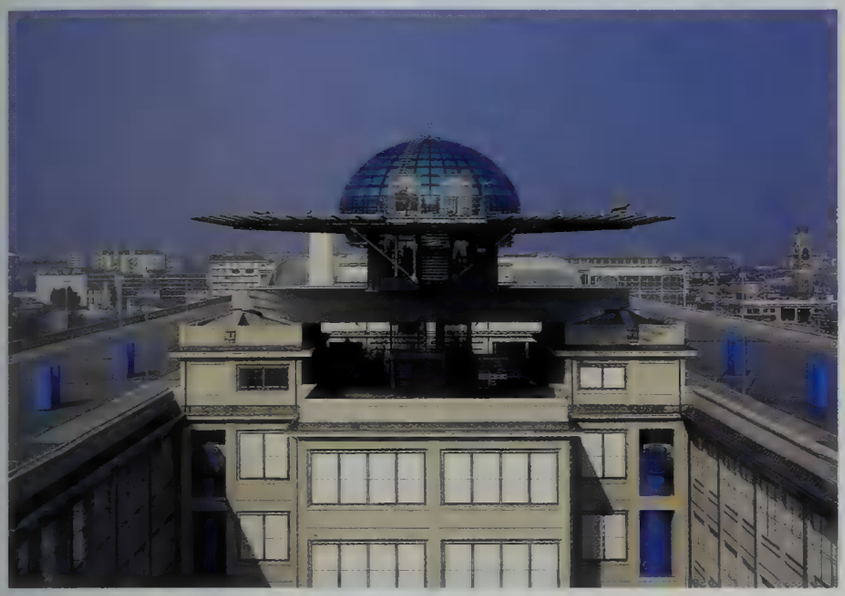


DETAIL 'B'



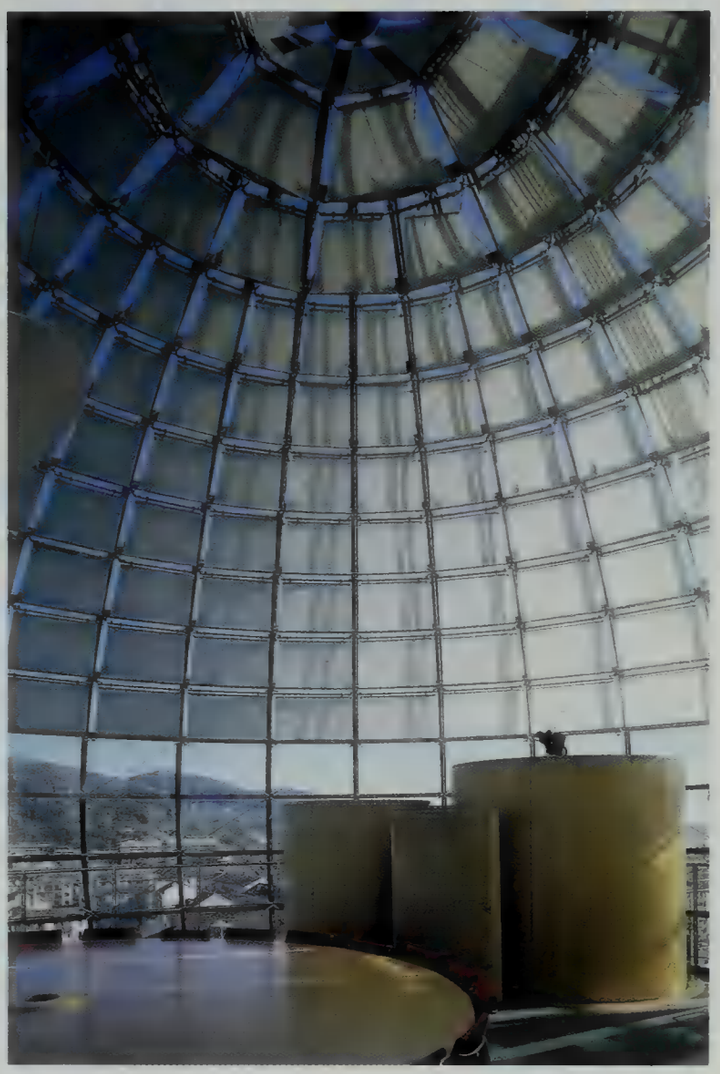
According to Piano, he devised the shape of the conference-room bubble after considering wind loads and the capabilities of structural glass. By keeping structural members less than 1.9 in. (48 mm) thick, the architects and engineer Peter Rice created a metal "lace" holding glass panels in place.

The panels are insulated units made of an exterior layer of heat-treated glass and an interior layer of laminated low-E glass. Each panel has a double curvature. Motorized screens protect panels facing the primary directions of the sun.





Just as the roof-top test track was the symbol of the old Lingotto, the bubble and helipad are the identifying icons for the reborn building (above). A sculpture by Susumu Shingu, who has worked with Piano on many projects, animates a courtyard (left). A restroom, a coat room, and a food-service counter are tucked behind beech-veneer cylinders in the conference room (right).



In March 1996, the first bubble opens as a high-tech conference room. (Plans for the second bubble are put on hold.) A European summit attended by heads of state comes to Lingotto and takes advantage of the bubble for photo opportunities. As Fiat's Agnelli had hoped, Lingotto and its glass-and-steel bubble are being used "as Turin's gateway to the world." So far, the project has cost $450 million, $32 million over budget, which considering the size of the project is considered reasonable.

By the fall of 1996, the shopping arcade opens to the public and helps bring alive Piano's original idea of creating "a city within the city." Like ancient Roman cities, this one starts with a simple grid, explains Piano. "You penetrate the mass of the building and then you find unexpected things—the concert hall, the bubble, a shopping street, piazzas."

Right now, the critical mass to make Lingotto a thriving city is not yet in place. The portion of the building around the northern-most courtyard is still empty. The University of Turin will not occupy this space as originally hoped, but a multiplex cinema is likely to move in. Although 60 percent of the office space, 50 of the 80 shops, and 2 million of the total 2.7 million sq ft are occupied, an emptiness still echoes through the vast complex. Less than 3,000 of the targeted population of 12,000 are currently working in the building. That will change. Fiat has decided to return its executive offices to Lingotto's palazzina, after being away for five decades, and will move in this spring. There are also plans to open a restaurant on the top of the building and open the test track to the public. You may not be allowed to test out your new Fiat on the roof, but you will be able take a spin around the track on your bicycle or rollerblades. ■

Manufacturers' Sources

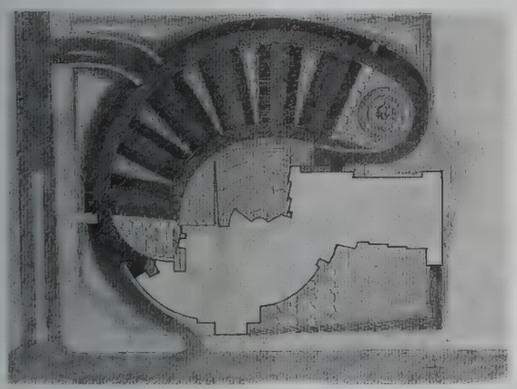
Stage & movable ceiling (concert hall): *SAM*
Parquet floor (concert hall): *Frigo Srl*
Acoustic timbers (concert hall): *Gabella Pascal*
Handrails, parapets, fittings (concert hall): *Gruppo Bodino*
Seats (concert hall): *B&B*
Audio facilities (concert hall): *Euphon*
Lighting (concert hall): *i Guzzini*
Steel structure (heliport): *De Valle, Maeg*
Steel structure, glazing system, fittings (bubble): *Gruppo Bodino*
Insulated glass (bubble): *Hardglass*
Lighting (bubble): *i Guzzini*



The main entrance to the museum is on the north side of the building, not visible from the street, nestled between the curved form of the "grotto" room and the more linear block of the library wing. The light colored gray cement stucco is intended to act as a foil to the architecture of Las Vegas's Strip.

Meyer, Scherer & Rockcastle's SAHARA WEST LIBRARY AND FINE ARTS MUSEUM is a world apart from the Las Vegas Strip.





From the street, the Sahara West Library and Fine Arts Museum appears as a series of telescoping volumes (above). Parking is hidden from public view at the back. Rock gardens between parking lanes provide additional camouflage (site plan).

by Karen Stein

Las Vegas is booming on and off the Strip. While a new crop of attention-grabbing hotels and casinos that feature mock volcanic eruptions, roller-coaster rides, and facsimiles of Egyptian pyramids and the Manhattan skyline dominate tourist images of Las Vegas, another kind of architecture is emerging behind the scenes, where people live. It's a parallel universe of more soft-spoken civic mindedness.

To respond to the region's tremendous population growth—presently, some 3,000 new people take up residence in Las Vegas each month—the city launched an ambitious program to enlarge its fledgling library system in the early 1970s. The first step of the initiative was the 1971 installation of a new director, Charles Hunsberger, who brought with him the lessons of his previous post in Bloomington, Ind., about 25 miles from Indiana's architecturally rich town of Columbus. It's in Columbus that he "got interested in libraries and architecture and in putting them together," he recalls.

Hunsberger's masterplan for Las Vegas called for merging the one existing city library and one existing county library into a single system, the Las Vegas/Clark County (LVCC) library district. According to his plan, the two buildings would be gradually supplemented by a series of architecturally distinct satellite facilities that would serve as the focus for the communities sprouting up around them. In addition to providing traditional library services—book lending and research—many of these facilities would also provide a cultural component by including exhibition or performance space.

Now numbering 23 branches, including instant architectural landmarks like the Las Vegas Library and Discovery Museum by Antoine Predock, FAIA [RECORD, October 1990, pages 68-75], today the LVCC library district is much as Hunsberger planned it would be. Hunsberger, however, has left the scene, having quit his job in 1993, a year prior to his scheduled retirement, amid mounting backlash to his agenda. While the expanded role of the system was praised by other library districts around the country as visionary, in recent years the hybrid of library and museum caused an uproar in the local community for losing sight of its primary objective. "I did what I planned to do," responds Hunsberger to allegations surrounding his premature departure.

With over $120 million of bond-allocated money spent on its facilities in an 11-year period, what is clear is that city coffers are now empty for libraries. The 23rd branch, the Sahara West Library and Fine Arts Museum, by Meyer, Scherer & Rockcastle, which replaced a small

Sahara West Library and Fine Arts Museum, Las Vegas, Nevada
Owner: *Las Vegas-Clark County Library District*
Design Architect: *Meyer, Scherer & Rockcastle—Jeff Scherer, AIA, partner-in-charge, library; Garth Rockcastle, AIA, partner-in-charge, museum; Jack Poling, project architect; Douglass Lundman, Rhys MacPherson, Rick Lundin, Ali Heshmati, Paul Neuhaus, David Foley, design project team; Lynn Barnhouse, Dawn Buffington, Meriwether Felt, interiors project team*
Executive Architect: *Tate & Snyder Architects—John G. Treston, AIA, project manager; Sheldon Colen, job captain; Jerry Cool, Wayne Ficklin, Mike Andersen, Patti Wills, Toni Alvarado, Mary Tenerelli, Sharon Carson, Paige Plautz, Jerry Vielma, Steve Foster, project team*
Engineers: *Martin-Peltyn, Inc. (structural)—Dave Peterson, project manager; JBA Consulting Engineers (M/E/P)—Don Koch, Dave Magderfrau, project managers; Poggemeyer Design Group (civil)—Jehrome Duran, project manager*
Landscape Architects: *Julie Bargmann (design); J.W. Zunino & Associates (construction documents)*
General Contractor: *Sletten Construction*

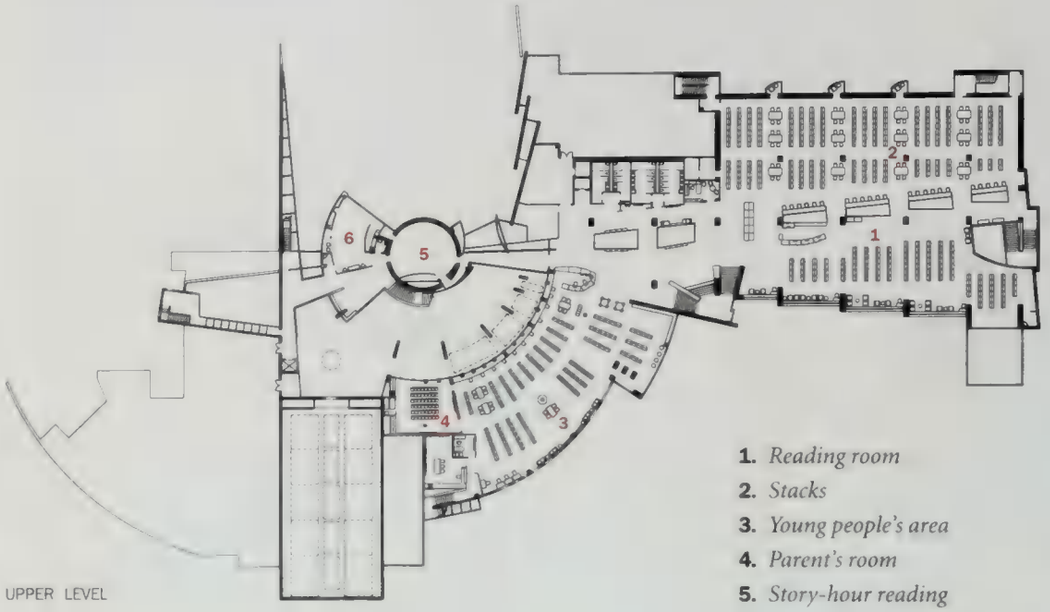






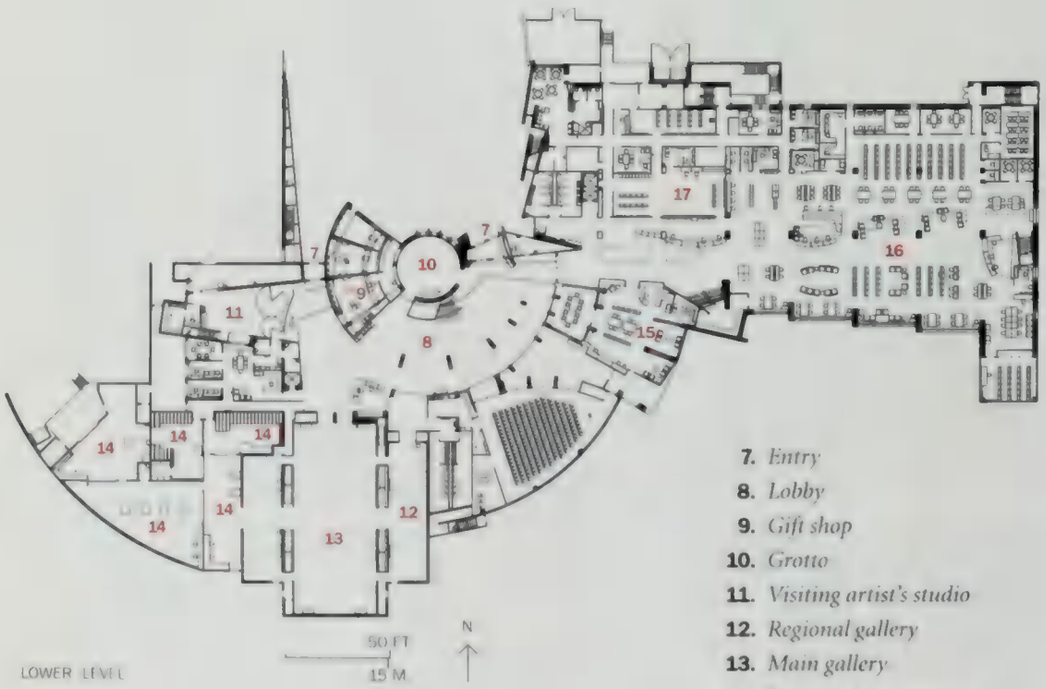
A wedge-shaped plaza provides the transition from the parking lot to the building's interior (top left). The main entrance is located at the juncture of "library" and "museum" (middle left) to encourage wandering between the two, while the secondary entrance (opposite), which is located opposite the gallery spaces, can be used for visiting artists and museum staff. The periodical reading room and additional library seating areas overlook the site of a future sculpture garden on a raised plinth to the south. Canopies provide shading and protect from excessive heat gain (bottom left).





UPPER LEVEL

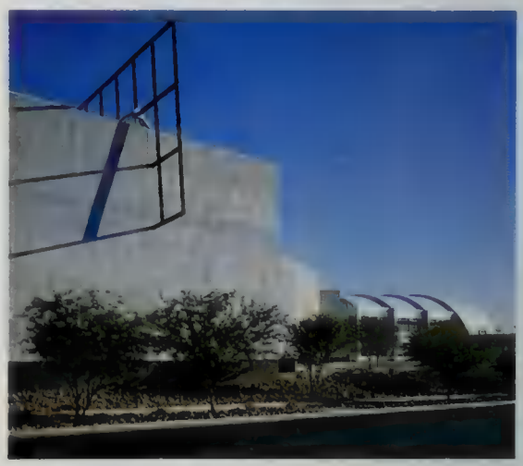
1. *Reading room*
2. *Stacks*
3. *Young people's area*
4. *Parent's room*
5. *Story-hour reading room*
6. *Board room*



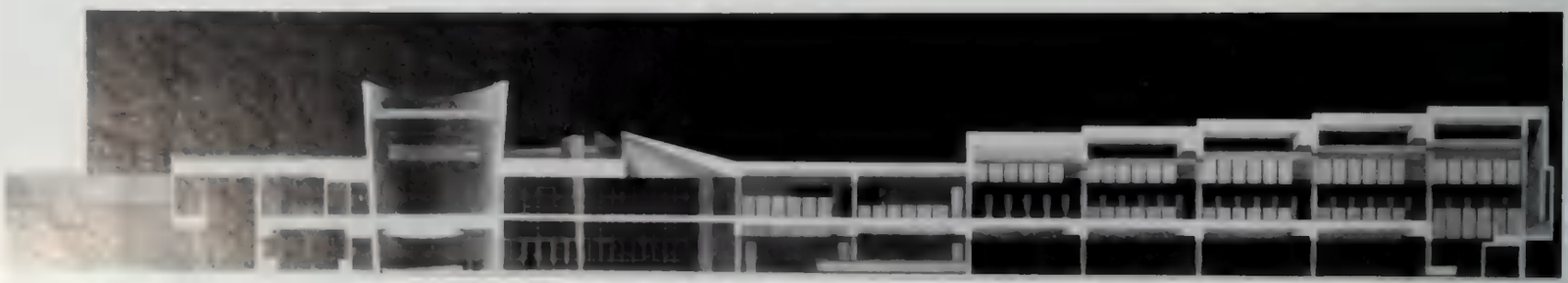
LOWER LEVEL

7. *Entry*
8. *Lobby*
9. *Gift shop*
10. *Grotto*
11. *Visiting artist's studio*
12. *Regional gallery*
13. *Main gallery*
14. *Preparation, storage, workshop, loading*
15. *Fine arts library*





Irregularly placed and shaped windows in the "celestial wall" of the east-facing facade are meant to catch the azimuth of winter and summer sun and reflect it inside (top and opposite). A metal grid pierces the gallery building. The grid will eventually be covered by vines.





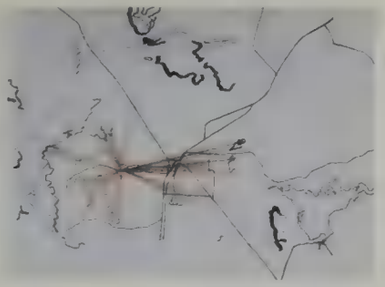
PROCESS

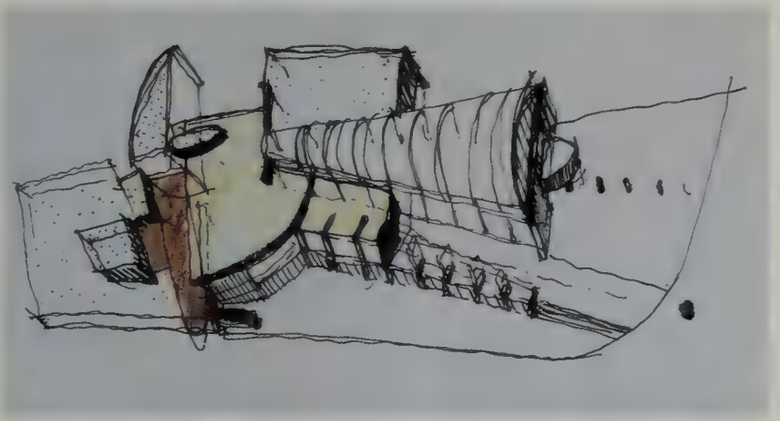
In an essay entitled "The Politics and Practices of Culture in Architecture in Las Vegas," Garth Rockcastle of the Sahara West Library and Fine Arts Museum's Minneapolis-based design architect Meyer, Scherer & Rockcastle explores, among other themes, his assessment of the site and its influence on the design. The essay is part of a collection of writings that will be published by the University of Virginia Press later this year.

"The project design was actually influenced by several external factors, including a unique regional history, a harsh climate, and the city's architectural and siting conventions. In opposition to the city's front lot norm for commercial property parking, we hollowed a segmented, radiating lot out of the rear of the site to help camouflage the sea of cars and hide views of some of the adjacent [gated residential community] properties. This allowed us to create an effective narrative landscape while focusing clear pedestrian access to the building entrances, across a shared courtyard. This exterior space also participates with the interior courtyard in a dynamic spiral around a central building mass. The front of the site is thereby preserved to become a sculpture garden along the boulevard, on a raised plinth with the building itself....

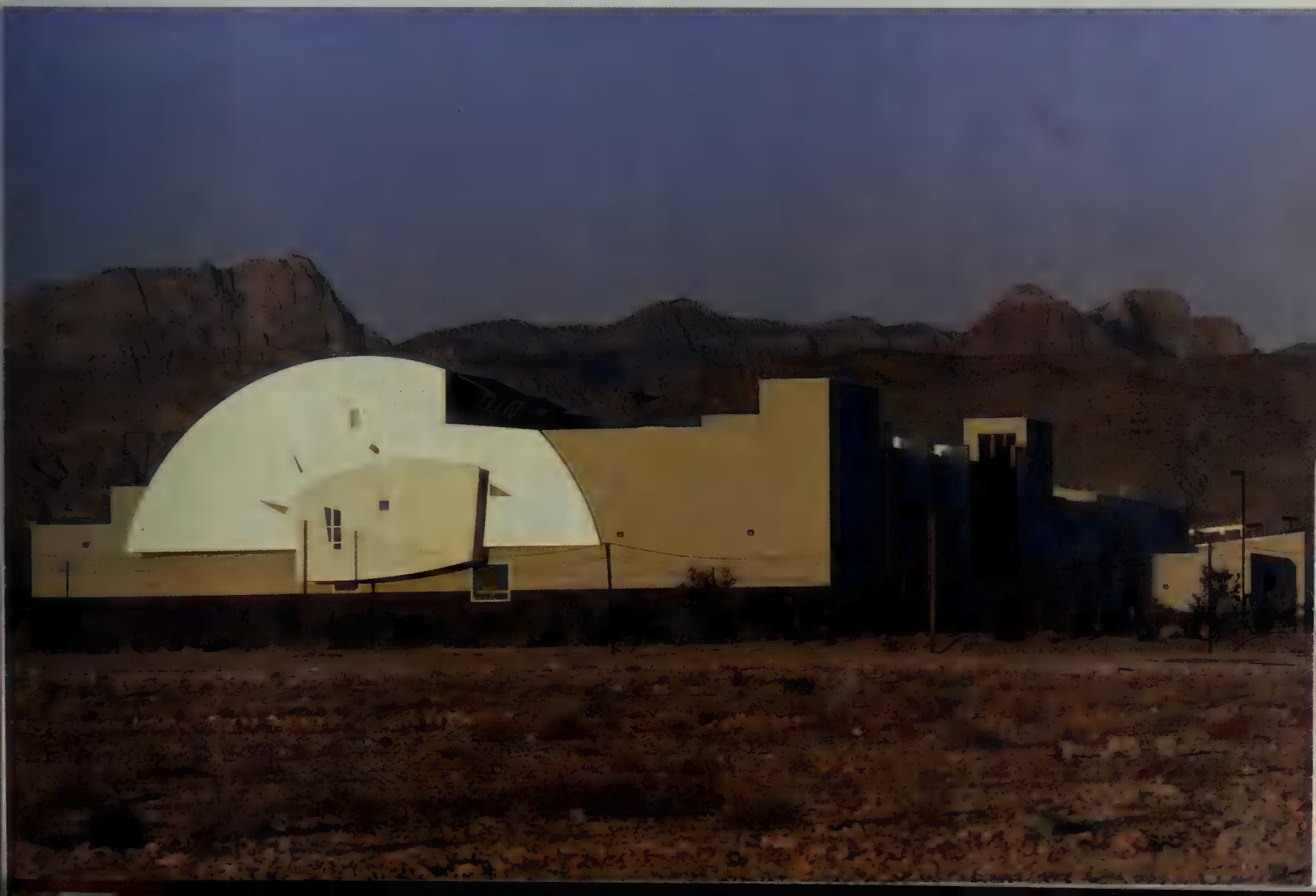
"The two institutions (museum and library) radiate outward from [the] center, each designed to be unique revelatory embodiments of their distinct cultural forms....

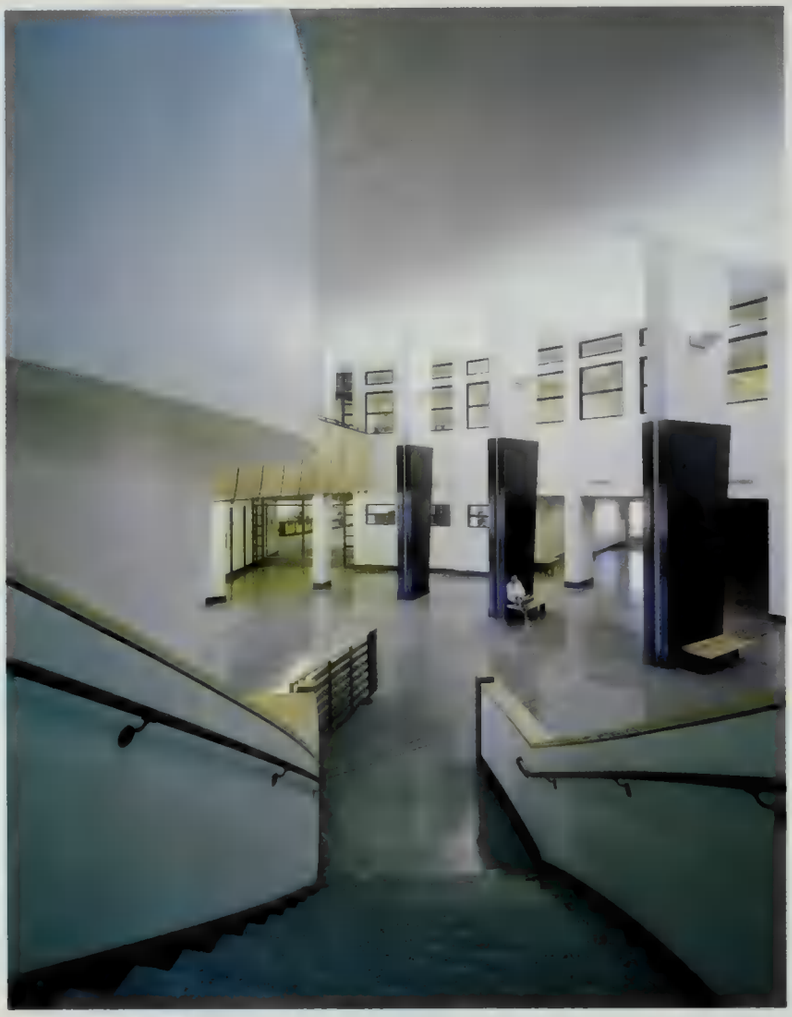
"The material choices for the project were selected and employed to maintain their more natural state (black granite, clear-seal hardwoods, clear-anodized aluminum, and cement-gray stucco) as a contrast to the highly animated and painted surfaces typical of LasVegas's commercial architecture. It was also an important inverse to the building's strong abstract forms and a more neutral background for the dynamic, programmatic life of the building."





"Before" (left). Concept sketches include a site/valley assessment (above) and a massing strategy (below).











The lobby (opposite top, left) joins library and museum. Suspended from the ceiling of the main gallery is a metal lighting grid that adjust between 10-35 ft (opposite, top right). Baffles shield direct sunlight in library reading areas. (opposite).

and successful storefront operation when it opened to the public in January, is the last of its generation. Current library district director Darrell Batson concurs: "This is it."

Garth Rockcastle, AIA, of Minneapolis-based Meyer, Scherer & Rockcastle (MS&R), the project's design architect, suppressed the split personality of the program on the exterior. Rather than make the building the amalgam of two distinct functions and parts, he and MS&R library specialist Jeff Scherer, AIA, conceived a 122,000-sq-ft whole that responds to site conditions such as views of downtown to the east and mountains to the west with an attempt to mitigate the effects of the harsh Nevada climate.

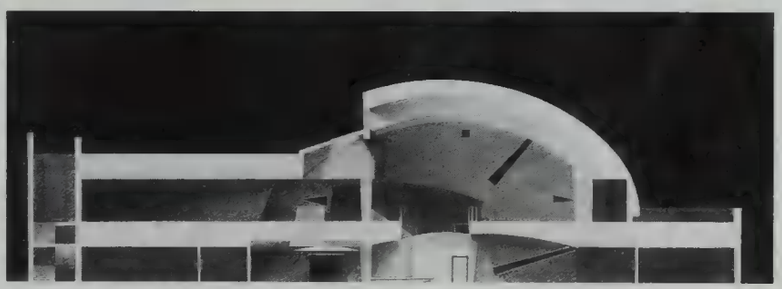
The strategy came in part from a desire to reinforce his vision of the building as a place of discovery, and in part from the fact that while the requirements of the library were highly specific, the exhibition component (and, more specifically, its operator) remained undefined even through construction. (Planned by Hunsberger as a venue "for the best [museum] traveling shows," it instead now holds a two-year lease with the Las Vegas Art Museum.) A generously sized foyer with book shop, museum store, board room, and visiting artist studio, binds the parts together on the inside. The main box of the library centers on a double-height rectangular reading room—traditional in scale and shape. "The interiors are almost Eastern," observes Batson, who notes that many of Las Vegas's newest citizens have migrated from the East Coast. "There's the reassurance of the library they left at home," he adds. Study carrels, meeting rooms, and reading niches line the perimeter. Says Batson of the overall plan,"It works."

Like Predock before him, Rockcastle was eager to distinguish his building from popularized images of Las Vegas. "It's an offset to the Strip," explains the architect. "It's meant to stand in vigorous contrast." While a nighttime drive down the Strip has the effect of passing a tray of surreal, glittering objects, Rockcastle sees the Sahara West Library and Fine Arts Museum not as another monument, but as "a framing device," something to work in, wander through, and, eventually, to look out from with a sense of wonder.

As if to further his claim, tiny glass rods pierce the building's shell, admitting day or moonlight inside, and casting beguiling shadows behind the grand stair between library floors (photo,middle right) and on the walls of the ground-floor story and exhibition "grotto" (top right). The glow, evocative but more subtle than the neon halo of downtown, is the message of the project. "Details are things you discover," says Rockcastle. "They grow in value, like books." ■







North-south section

Glass rods pierce walls of the ground floor grotto (at left in top photo) and the "celestial wall" (middle). A north-south section shows stacks and study areas around the double-height reading room (bottom).

Manufacturers' Sources
Block: *Marnell Masonry*
Curtain walls, aluminum windows: *Kawneer Company*
Granite panels at building's base: *Cold Springs Granite*
Single-ply roofing: *JPS Elastomerics*
Safety glazed skylights: *Viracon, Inc.*
Glass rods: *LOF*
Laminated colored glazing: *Monsanto*
Glass: *LOF and PPG Industries*
Ceiling lighting: *Lithonia, Kirlin*
Desk lighting, hall sconces: *Leucos*
Wood interior doors: *Weyerhaeuser Co.*
Fire-control doors: *Won-Dor, Inc.*
Acoustical ceilings, suspension grids: *USG Interiors*
Plastic laminate on casework: *Nevamar*
Water fountains: *Elkay*



"It resembles a huge, continuous hammock suspended between concrete trees," Eero Saarinen wrote [RECORD, July 1963, page 109]."It is made of light suspension bridge cables between which the concrete roof deck panels fit. The concrete piers slope outward to counteract the pull of the cables. We exaggerated this outward slope as well as the compressive flange at the rear of the columns in order to give the colonnade ■ dynamic and soaring look—in addition to its dignity."

SOM's Addition to DULLES INTERNATIONAL AIRPORT Respects Eero Saarinen's "Modern Masterpiece"



by Allen Freeman

I think this airport is the best thing I have done," Eero Saarinen said more than once during the spring and summer of 1961, referring to Dulles International Airport, which opened the following year in Chantilly, Va. But Saarinen never saw the completed building; an unpredicted brain tumor took his life in September of that year at age 51. The 600-ft-long terminal, a "continuous hammock suspended between concrete trees," was almost instantly regarded as a Modern masterpiece, and its status has not diminished over the years. During America's bicentennial year, a poll of prominent architects and critics named Dulles America's most admired recent building. Only a year later, however, preservationists were defending it against unsympathetic tamperings.

Dulles, Washington, D.C.'s second airport and the first anywhere to be designed for jetliner service, like other terminals of its era fell victim to technological change, enormous air-travel growth, and heightened security. The airport has expanded and Saarinen's terminal has been altered, each time igniting preservationists' concerns. Today the New York City office of Skidmore, Owings & Merrill is building a multiphase expansion, one that has doubled the length of the previously little-touched catenary terminal.

What was at stake

The SOM team acquired a heightened appreciation for their predecessor's work while analyzing Dulles's design and construction. SOM project manager Tony Vacchione praises the careful sequencing of passenger arrival, orchestrated by Saarinen and landscape architect Dan Kiley along the Dulles approach road, ultimately revealing the terminal as a "giant lantern on the landscape." And SOM design partner Marilyn Taylor values the relationship between the low terminal and the airport's tall control tower rising on the field side. "I never realized how complex it was to pull off a simple result," she says.

Taylor, a former Washingtonian who recalls a childhood visit to Dulles when it first opened, had grown concerned that the image she carried in her head since 1962 would radically change. "A year or so into the project," she says, "when we began looking at computer renderings of the building that extended its length to 1,200 ft, we realized that it isn't [primarily] an exercise in proportion but rather an extrudable section, one that would be richer, more commanding when extended." (The addition of 300 ft on both ends was indeed envisioned by Saarinen's team—including partners Joseph Lacy and John Dinkeloo, chief designer Kevin Roche, and engineers Ammann & Whitney). The terminal now seems less of a lantern and more an inevitable part of the forested Virginia plain that sweeps westward from Washington to the Blue Ridge Mountains.

While appreciating the building's importance, the client was well aware of its shortcomings. "Here [is] a building that we are all intensely proud of, that has a very, very identifiable architectural image," observes Jim Wilding, general manager and CEO of the Metropolitan Washington Airports Authority (spun off from the FAA several years ago). "The through-put [passenger processing] capacity of the extended building needed to be several orders of magnitude beyond the original expectation."

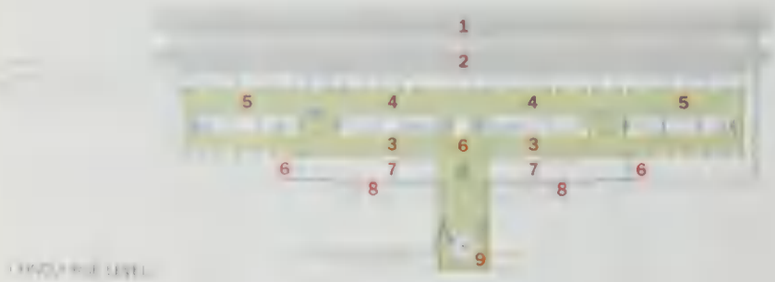
For his day, however, Saarinen had thoroughly researched the problems likely to be encountered by jet setters. He sent out teams with counters and stopwatches to study travelers, noting how (*text continues*)

Project: *Washington Dulles International Airport, Washington D.C.*
Client: *Metropolitan Washington Airport Authority*
Architect, Planning, and Interior Design: *Skidmore Owings & Merrill—David Childs and Michael McCarthy, design partners; Marilyn Jordan Taylor, airport design partner; Anthony Vacchione, project manager; Robert Chicas, deputy project manager; Peter Ruggiero, senior designer; Kevin Peters, Joseph Blanchfield, senior technical coordinators; Mark Igoe, technical coordinator*
Consultants: *Ammann & Whitney (structural); H.C. Yu and Associates (M/E/P); Wiles Mensch Corporation (civil); Vitteta Group/Studio Four (historic preservation); Breier Neidle Patrone Associates (baggage); Chermayeff & Geismar Associates (signage); Hanscomb Associates (cost estimating); Ancentech Inc. (acoustics)*

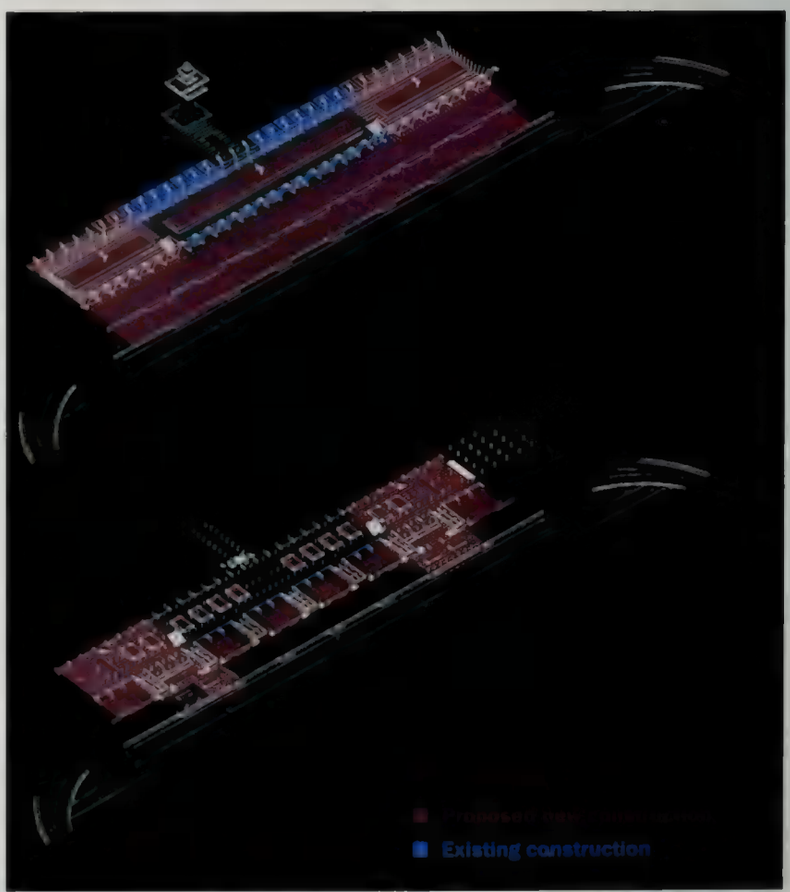
Allen Freeman is a senior editor for PRESERVATION magazine.



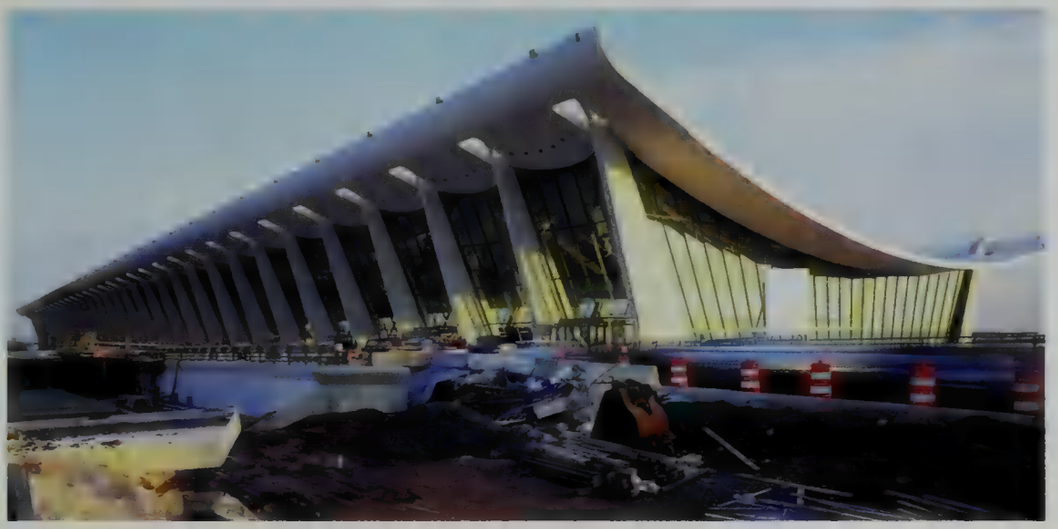


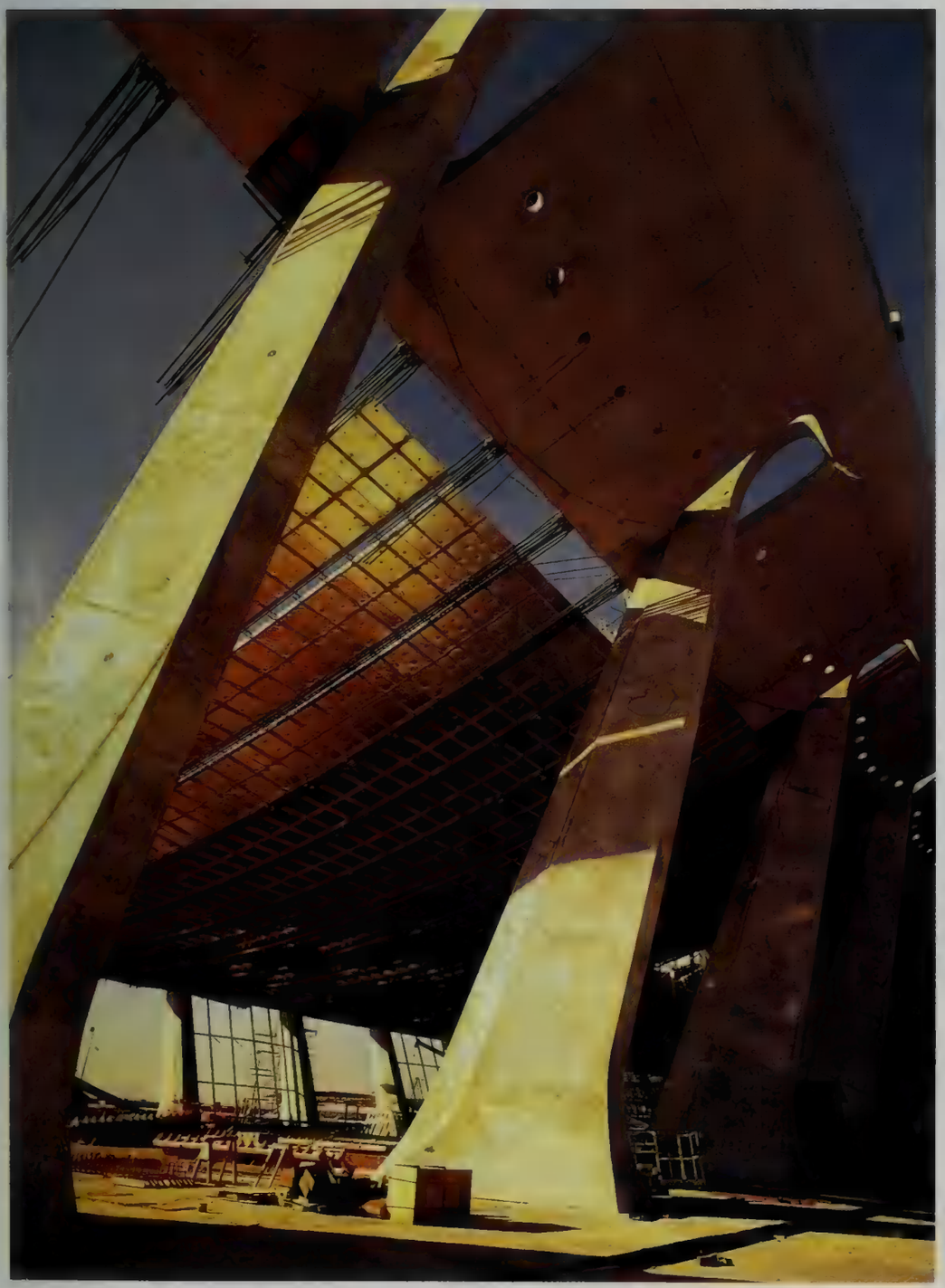


1. *Departing passenger*
2. *Arriving passenger*
3. *Information*
4. *Ticketing & checking*
5. *New ticketing*
6. *Security*
7. *1980 Concourse*
8. *Mobile lounge port*
9. *Restaurant*
10. *New arrival*
11. *Baggage claim*
12. *Customs*
13. *Offices*



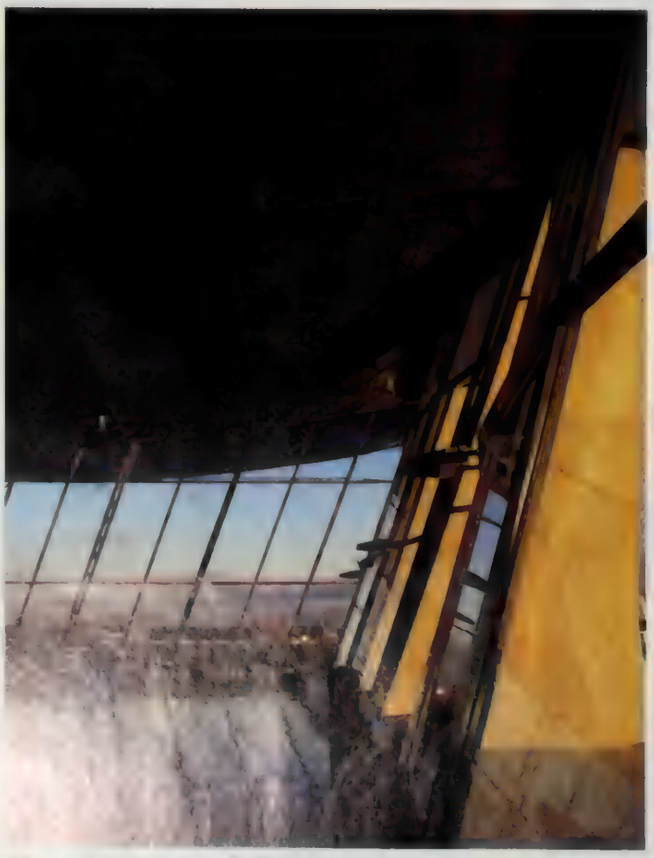
At the beginning of the design process, there was some concern about how adding to each end of the original terminal, as Saarinen had originally planned, would affect the proportions of the building. But after computer renderings were completed, extruding the terminal's section made its appearance become "richer and more comanding," according to SOM's design partner Marilyn Taylor.



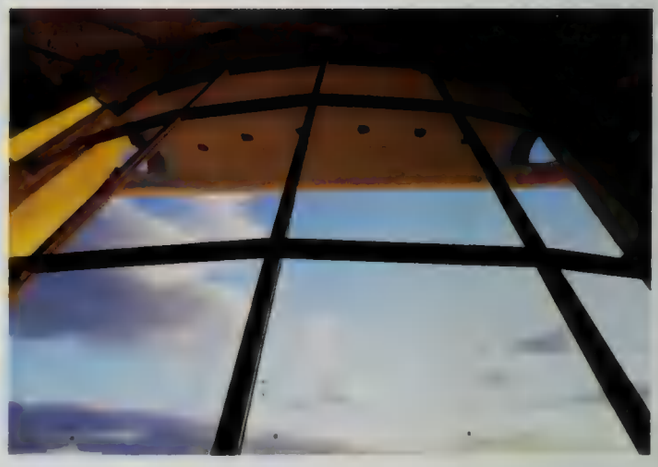


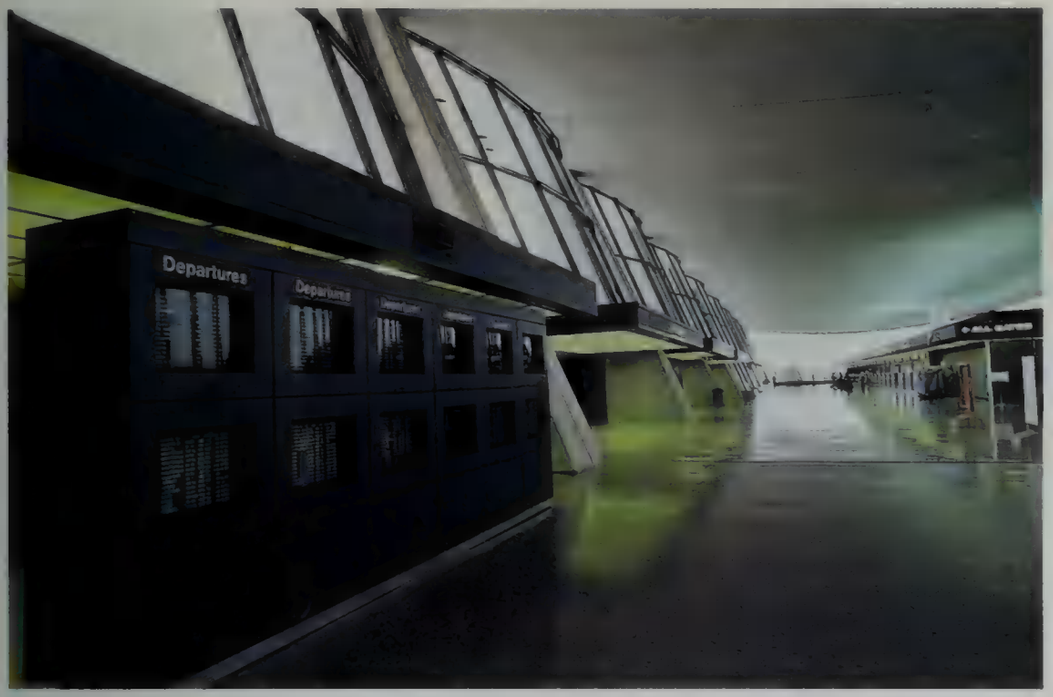
Aside from altering the terminal's suspension cables and connections to make the roof-load capacity comply with building code requirements (left), most of the innovative structural system recreated for the terminal additions (below) was unchanged from Saarinen and Ammann & Whitneys' original design.





Curtainwall for the new addition replicated the original, with the exception of the use of modern gaskets; the original zipper gaskets had had a tendency to fail. The curtainwall in the existing part of the terminal will be updated as part of a future modernization project.







To accommodate more queing space, new ticket counters (left and above) have been built 20 ft closer to the air-side of the terminal (and in the existing portion of the terminal will be relocated to match). The luminous ceilings, terrazzo floors, signage typeface, and rosewood paneling at the ticket counters replicate the original Saarinen designs.

far they walked, what they did, peak loading conditions, baggage handling, economics, and other problems associated with flying that worsened as jet travel became more common. The team's resulting concept for easing these difficulties was a brilliant one for the elite few that then chose costly air travel. Departing passengers had only to walk the short 150-ft width of the terminal, where they boarded mobile lounges and were conveyed to planes. To convince the reluctant airlines, Saarinen recruited his long-time colleague, Charles Eames, to produce a short movie as a selling tool. But as jets ballooned in size and passenger travel soared, the lounges became an annoyingly inadequate anachronism. Air-safety concerns mandated the closing of the mobile-lounge doors that plugged into the air-side bays between the soaring columns in favor of a single entrance that funneled passengers through a narrow X-ray-screening throat.

To smooth passenger flow, in 1980, Hellmuth, Obata & Kassabaum added a low, skylighted, 50-ft-wide corridor that extends the length of the terminal on the field side. A later addition, the International Arrivals Building by SOM, is even less obtrusive, rising only to the height of the plinth. When completed in 1989, it hunkered out of sight 300 feet west of the terminal; it now abuts the extended terminal's base. Mobile lounges now serve only a temporary-looking midfield terminal.

How to add to a masterpiece

SOM's job has been to execute the originally proposed expansion under stricter building codes mandating, for example, a stronger concrete mix and safety glazing. The team also had to unobtrusively add new space—especially at baggage and arrivals, anticipate a future underground rail connection to existing and planned mid-field terminals, and reprogram the existing space. Most importantly, they had to seamlessly reconcile the building's old and new parts.

To accommodate growth, the Saarinen team had the foresight to stretch out the circuit road, terrace the plinth and punch blank portals into it. But the arrival and departure roads and attendant curbside areas have proved too narrow to handle today's mass air-travel market. Carefully preserving sightlines, SOM is demolishing the road structure in phases (permitting continuous operation) and rebuilding it significantly widened. The architect is also increasing the number of portals in the plinth from eight to 14, spacing them closer to one another while closely replicating the Saarinen portal design. SOM has reconfigured the lower-level baggage claim, routing bag-delivery devices around existing structure, and excavating basements under the additions to expand and automate baggage handling.

Despite changes in technology, SOM found the most straightforward way of building the additions was to replicate the original scheme of draping concrete panels over catenary cables, tensioned by the outward slanting piers (photos previous pages). To make the addition appear seamless, the architect matched concrete finish, window profiles (the safety-glass color is slightly different), and terrazzo floors. Replication extended to the custom typeface of signage and the luminous ceilings and rosewood paneling at the ticket counters. There are subtle alterations. Glazing has replaced mobile-lounge portals and the low ticketing and concession structure is being shifted in stages 20 ft closer to the air side to allow more queuing space for ticketing. The inadequate air-lock function of the entrances has also been improved.

Still to be completed are replacement of the original grimy, asbestos-bearing, catenary-roof ceiling and completion of the new auto-carriageway plinth. While several additions to the airport are still in construction or planned, come November, Saarinen's long-range vision of "the best thing I have done," will be a reality.

What would he say? He might like the improved view unveiled when the ticketing structure was moved. And he would appreciate the respect accorded his design by SOM. He himself might have been incapable of the same approach—think of the earlier bravura of the TWA terminal at New York City's JFK Airport. But as the Airports Authority's Wildings observes, "It was an extremely tricky assignment, and probably particularly so for a firm like SOM that has such a strong design reputation. They clearly subordinated their esthetic design talents [and] let Mr. Saarinen call the tune." ■

Manufacturers' Sources

Curtain walls: *Harmon Contract WSA*
Glass: *Hehr International*
Terrazzo floors: *Corradini/Grazzini*
Signage contractor: *King Products*
Elevators/escalators: *Montgomery Elevator*
Baggage handling system: *G&T Conveyor Co.*



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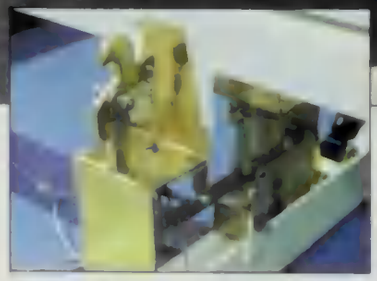
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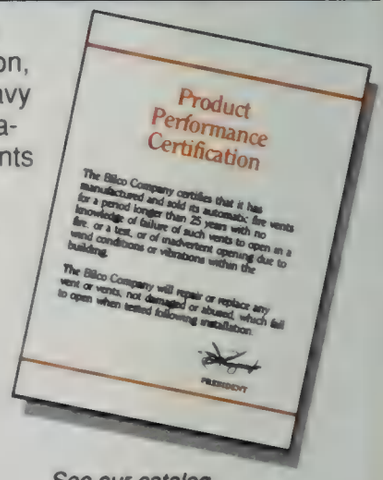


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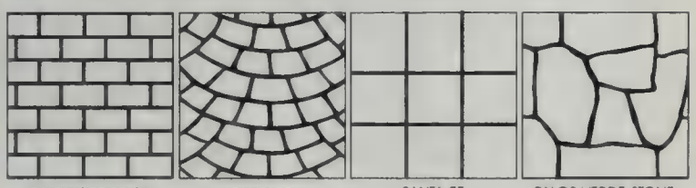
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CIRCLE 159 ON INQUIRY CARD

Vegas' NY-NY Casino-Hotel Shows How To Keep the Crowds Coming

BENEATH THE SEEMINGLY OUT-OF-CONTROL FACADE, THE LATEST LAS VEGAS EXTRAVAGANZA EXHIBITS A COMPLEX AND SAVVY PUBLIC ARCHITECTURE THAT SUITS TODAY'S POPULAR CULTURE.

by Alan Hess

Twenty-five years ago, legal gambling in the United States displayed a modest profile. Las Vegas with its great neon signs was gaudy but isolated; racetracks like Santa Anita and Hialeah were Runyonesque islands from the past. And there was a scattering of small card rooms, mostly in the back rooms of bars and roadhouses off the beaten track.

All that has changed. Today, supermarkets in many states have video lottery terminals and riverboat casinos ply the Mississippi. More than a hundred Native-American reservations, primarily in remote areas, offer gambling housed in everything from simple prefab structures to full-scale Las Vegas-style casinos like the Mohegan Sun casino which opened last fall in rural Connecticut [see page 104]. Mining towns in Colorado have opened casinos to increase tourism. Big cities like Atlantic City, New Orleans, Chicago, and Detroit have also attempted—less successfully—to bring in casinos. And each opening of the latest Las Vegas extravaganza is treated with the hoopla once reserved for presidential inaugurations and Hollywood premiers.



Despite Atlantic City's competition, Las Vegas is still the state of the art. New York-New York (NY-NY), the Las Vegas Strip's latest casino-hotel marvel, combines casino gambling with many of the amenities of a full-service resort: hotel, restaurants, shows, attractions, swimming pool, even a roller coaster. NY-NY blazes new trails in a new urban form: an entertainment compound on the sidewalks of a maturing suburban commercial strip.

The nonstop traffic at NY-NY's main entry is chaos enough, but for good measure every few minutes from morning till night, a roller coaster clutching shrieking victims plummets to within a few feet of the porte cochere before swooping upwards.

That coaster is a constant, crazed reminder of the swiftness with which entertainment—and gambling—has become an anchor industry in American cities. This spectacular $460-million Manhattan simulacrum looks out of control: a 47-story replica of the world's most famous skyline sprouting out of the Western desert. Include its neighbors—the king's castle, Ramses' tomb, pirate battles, giant lions, and the grand-daddy of all commercial strips—and its architecture appears *completely* out of control.

In this fast-paced, mass-market, commercial reality of the Las Vegas fantasyland, the rules of normal architecture seem to have been violently overthrown. But peer beneath the gooey confections and one finds a remarkably complex and savvy public architecture that comfortably suits today's commercial and popular culture. Its architectural and planning lessons—no matter how unconventional—apply more broadly than just to the gambling industry.

Today, entertainment architecture is the engine and the anchor

Alan Hess is an architect and the architecture critic for the San Jose Mercury News. *He is also the author of* Viva Las Vegas: After-Hours Architecture.



Due to concerns for trespassing on the ownership of images, the buildings comprising the NY-NY facade (left) are from before 1940. The 47-story project adds 2,034 hotel rooms to a town where 12,000 rooms have been built over the last five years and 5,000 are currently under construction. Inside, the casino floor is laid out to recall the streets of New York (below).



for suburban and urban development across the country [see Building Types Study, page 90]. From Times Square to urbanizing suburbs like Irvine, California, cities, developers and architects are struggling to create successful public spaces and buildings. Entertainment rules, whether it is in the form of a 24-screen cineplex at the core of a new development, or themed restaurants and shops, or sports arenas. Even traditional cultural bastions like museums must today answer the same questions: How to attract people, keep them happy, and keep them coming back?

Over 50 years, the Las Vegas Strip has learned—largely by experiment—how to attract, please, and deal with masses of people. Gambling is only a part of the equation; it is also the environment, the variety, the entertainment, the sights that keeps the masses returning. Each resort is, in effect, a miniature city with all the problems of congestion, safety, maintenance, and traffic. About 1,500 employees work at NY-NY at any one time, caring for 100,000 customers per day. Not only has Las Vegas evolved a sophisticated use of popular themed imagery, but it has learned how to use those themed environments to create real, workable three-dimensional public spaces. Whether glimpsed from a plane landing at McCarran Airport, or at the scale of a hungry gambler dining in the streets of the faux-Greenwich Village food court, NY-NY's theme writes the latest chapter in the Strip's post-industrial urban-design guidebook.

Robert Venturi, Denise Scott Brown, and Steven Izenour codified some of those rules a quarter-century ago in *Learning From Las Vegas*. Many of its lessons still hold true. Signs are still critical—though NY-NY has pushed the art to the point where the entire highrise has become the sign. Symbol still shapes space on the Strip as effectively as ever—though on a larger scale and with even greater complexity, inside and out. Popular taste creates our monuments—leaving a lot of high-art architecture looking emotionally emaciated in comparison. Impermanence is still a governing principle; MGM Grand's $1 billion hotel-casino opened only three years ago and is now in the process of a major remodeling.

The Las Vegas Strip has never stopped changing. But now, with suburban areas growing denser and more varied, with entertainment venues growing in importance, with theming emerging as a multifaceted approach to architecture, and with gambling a national industry, the rest of the country is finally catching up with Las Vegas.

Caesars Palace introduced the modern tradition of themed environments to Las Vegas in 1966. Its single idea—evoke the decadent opulence of Imperial Rome in a modern-day casino—governed its architecture, its site planning, even its waitress uniforms. NY-NY also started with a single idea; its architecture is largely the result of fleshing out that

idea within the restraints of a complex public-entertainment venue.

Primadonna Resorts, Inc., and MGM Grand, Inc., partners in the NY-NY project, gave Las Vegas architect-engineers Gaskin & Bezanski and interior designers Yates-Silverman a concept drawing which showed the skyline of New York. Architect Neal Gaskin, working alongside Yates-Silverman, developed the sketch by selecting specific New York buildings and arranging them as a plausible 1.5 million-sq-ft, 2,034-room hotel—a tower of skyscraper icons dominated by the Empire State and Chrysler buildings.

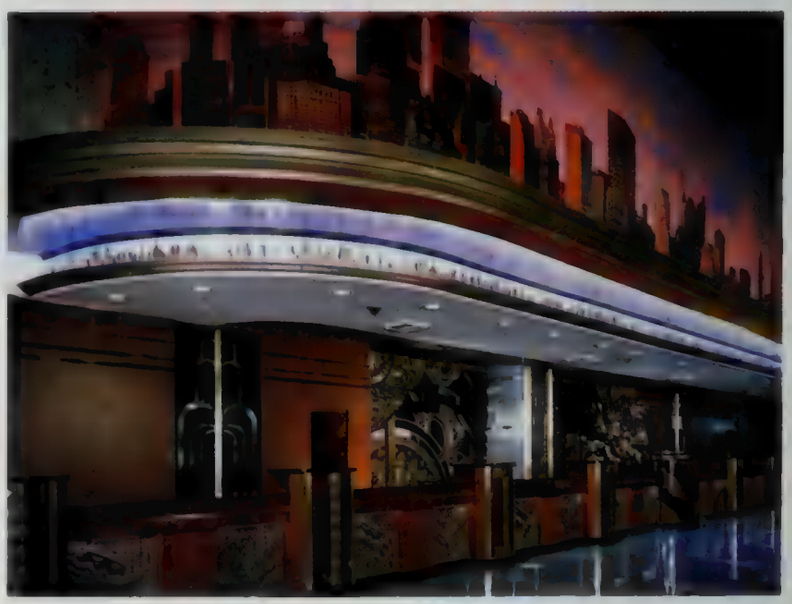
In the interiors, the depiction of New York is straightforward, which is not to say that it goes out of its way to be authentic. It is a "purply, twilight, 1930s-1940s Art Deco" New York, says Joyce Orias, AIA, project manager and designer for Yates-Silverman. Decoded, that means it is safely in the time before New York City became a dangerous place for the middle class, the retirees, and the yuppies who constitute NY-NY's target market. It is the New York of "Wonderful Town," with smiling sailors dating pretty girls and falling in love riding the subway while "doin' the town." It hopes to be the New York of Moderne nightclubs depicted in Astaire-Rogers movies, of tuxedos and evening gowns, and Art Deco sophistication—though such glamour has not worked in Las Vegas since Howard Hughes left town. The cinematic experience shapes this architecture as much as the invention of perspective influenced Alberti and Brunelleschi in the 15th century.



The result is New York, but of course it isn't New York. The adaptations, reproportioning, and inflections necessary to transform the famous Manhattan skyline into a 1.5 million sq-ft, concrete-frame high-rise hotel with an 84,000 sq-ft, steel-frame casino on the ground floor constitute the real architecture of the building. What makes the hotel tower read as a skyline is the dimension given to the individual New York buildings. Four of the towers rise above the rest—and contain the elevator towers that weave together a complex zoned system of vertical circulation.

Even more daring is the zigzagging edge of the concrete-framed, post-tensioned floor plates. Steel-frame construction would have been too slow for the fast-tracked construction schedule. Concrete produced a dynamic facade, alternately convex and concave, that contradicts the conventional construction logic dictating regular, flat-edged floorplates. The design required 25 percent more concrete structural columns to accommodate the bends and shifts—but neither client nor contractor Marnell Corrao Associates seriously questioned that it was the right decision, says architect Gaskin. The image of clustered skyscrapers was too powerful to tamper with. In the land of theming, form follows fantasy.

Sheathed in synthetic stucco and about one-third the size of the originals, NY-NY's skyscrapers would fool no architect familiar with the real thing. And yet there is art in the design. The selection, proportioning, and massing of the buildings convincingly suggests the cinematic close-



The cage, where much cash is stored, is placed at the center of the casino floor and is slyly dressed as the NY-NY Stock Exchange (top). Art Deco New York is evoked in the styling of the hotel's reception area (above).

In the 84,000-sq-ft, single-level casino, gamblers are kept busy with 2,400 slot machines (below).



ups and tightly framed long shots of a walk through Manhattan.

The interplay of theming and a practical mega-hotel is seen in the way NY-NY—following recent Las Vegas trends—handles pedestrian and auto traffic on, around and off the site. NY-NY's neighbors on the corner of Tropicana and Las Vegas Boulevard (the Strip) include the Tropicana, MGM Grand, and Excalibur casino-hotels. Chronically congested, it is one of the busiest corners in the state.

A secondary private street system circles the hotel, adding an entry off the Strip side as well as the main porte cochere off Tropicana. It links the hotel to the 10-story parking structure for 3,800 cars, employee parking, and a separate entry for tour buses. NY-NY's roller coaster, adding another elevated lane of specialty traffic, is just a highly kinetic version of the intricacies of traffic circulation at these mini-city resorts.

More innovative is the balance struck between car and pedestrian traffic. The Strip, the ultimate car-oriented commercial street, had no sidewalks for many years. But about 15 years ago, foot traffic between hotels began to increase as new hotels filled in vacant land. It is a turn of affairs no one predicted as this spread-out suburbia turned urban. This sidewalk life produced such pedestrian attractions as the Mirage volcano and the Treasure Island pirate battle—three-dimensional action shows that have largely superseded the animated neon signs of the past.

To accommodate this unprophesied turn of events, Clark County built four pedestrian overpasses at the Tropicana corner three years ago. As the first new mega-resort to be built on the corner since then, NY-NY takes full advantage of the bridges by tying its two main pedestrian entries to the second-level pedestrian bridge system.

On the Strip side, the entry is through an abbreviated facade of Grand Central Station; on the Tropicana side, through the Soldiers and Sailors Monument. The entries open onto a spacious area echoing the stone-clad concourses of Grand Central. Thus the New York theme determines the design of the entry. From the second level, the panorama of NY-NY's casino echoes the view of Grand Central from its mezzanine.

The views at NY-NY are a conflation of Manhattan. A stand of faux trees masses in the distance, like a glimpse of Central Park. Distant views of the skyline are painted murals, amended by three-dimensional building fragments awkwardly sliced off at the third story by the acoustic-tile ceiling. The New York theme orders all of the interior spaces.

Yet the trappings of today's Las Vegas casino overwhelm the themed elements, especially indoors. These are huge, formless warehouse spaces filled with slot machines, gaming tables, bars, and lounges. The chatter, clink, chirp and flash of video poker and video slots dominate—Big Apple ambiance notwithstanding.

The interiors are based on a gambling plan, provided to Yates-Silverman by the owners, that dictates such factors as the number and layout of poker tables, 2,400 slot machines, roulette tables, high- and low-stakes games. Yates-Silverman then laid out the required games on the casino floor, organizing them with pathways. Delineated by different colors in the carpet, or lines of color in the terrazzo floors, they connect the entries, hotel registration, restaurants, showroom, and elevator lobbies.

One example of creating fairly convincing real spaces in a themed environment is the Greenwich Village/Little Italy section, NY-NY's food court. Narrow pedestrian streets wind through alleys and small squares; neon-lit Times Square is glimpsed at odd angles at the end of winding roads. Greenwich Village buildings are turned into a doll's town of toy-like scale on the upper floors. But on the ground level, they are effectively grungy with real door buzzers and graffiti-covered *New York Times* news boxes. It may be a movie set, but it's one built to be convincing—and enjoyable, not just for a one-minute scene, but in three dimensions, with real people strolling through it.

Greenwich Village's level of grunge is noticeably avoided on the exterior of NY-NY, where polyester colors and too-neat faux-stonework on the famous facades that ring the casino level of the building betray the thinness of the materials—and hamper the enjoyment of the fantasy. It pointedly contrasts with the convincing patina of the pirate village at the Treasure Island hotel-casino on the Strip.

Las Vegas has evolved a range of themed environments wide enough to allow us to begin to make critical comparisons. How easily does it convince us to suspend disbelief? How well is its narrative told? Does it work at both the urban and the human scale? Has it learned from the long tradition of commercial vernacular design and does it push those lessons any further? What is the quality of its sidewalk life?

TODAY ENTERTAINMENT ARCHITECTURE IS AN ENGINE FOR SUBURBAN AND URBAN DEVELOPMENT.

At one time, world's fairs provided the public with images of a better city. For better or worse, the Las Vegas Strip provides a new model for public places. New York City was the 19th century's urban prototype. Despite NY-NY's Manhattan theme, the Las Vegas Strip owes little to that model. Each resort on the Strip is a miniature, self-contained city, sitting in a district of a score of other self-contained mini-cities.

Gambling attracts the millions of people and underwrites the enormous budgets that make today's Las Vegas casino-hotels possible. But the physical form of these places is about more than gambling. It is about creating public places and public faces.

Restoring Wright's Wingspread

BOATBUILDING TECHNIQUES AND AIRCRAFT MATERIALS RESCUE THE DANGEROUSLY WEAKENED ROOF OF A MASTERPIECE.

by B.J. Novitski

For nearly 60 years, the ingenious roof held its own. Finally age, weather, and other factors led to a potentially disastrous structural failure of one of Frank Lloyd Wright's masterpieces. Now, the roof of Wingspread, a National Historic Landmark in Racine, Wisconsin, is being restored, thanks to some equally ingenious teamwork and the bold use of high-tech materials. While respecting the historic qualities of this 1937 house and Wright's design intent, The Hillier Group of Princeton, N.J., and firm's consultants have nearly invisibly repaired a damaging and potentially dangerous roof failure. What began as a structural stabilization project expanded into an adventure, marrying historic architecture with modern methods and materials.

Wingspread was originally designed as a private residence for Herbert F. Johnson of the Johnson Wax family. The house features a central "great hall" from which four wings extend in a pinwheel formation. Wright and his client fashioned this configuration to offer contrasting public and private spaces to the large Johnson family. In 1959, the family moved out and the Johnson Foundation was given the house for hosting conferences. These conferences, selected for their potential contribution to the public good, have been remarkably successful in inspiring important and creative ideas. National Public Radio, for example, was an idea conceived at Wingspread.

Instrumental in stirring awe and intellectual creativity is the 30-ft-high great hall with its huge central fireplace and 132 skylights arrayed in an elongated octagonal form. The hall's roof is in three sections. The upper roof is supported by steel beams cantilevered from the massive chimney. The lower roof is supported by brick piers that encircle the entire hall and a compression ring made of steel channels at its top. Between the upper and lower roofs are the staggered skylights, their framing zigzag-shaped in section. The lightness of the skylights within the structural schema is central to Wingspread's magic—and the restorers' greatest challenge. In contrast to the brick and steel supports, the filigree of light-framed skylights is, however, the weak link in the system. Wright may have expected the scantily-nailed two-by-fours to support no loads but ultimately, they pulled apart.







The existing great hall and East Wing of Wingspread as it appeared prior to restoration (top). Temporary shoring was installed so use of the building could continue while a solution to structural problems was devised (middle). The temporary enclosure (bottom) was erected around the hall to provide protection during the restoration.

This failure may have been due, in part, to the accumulated weakening of the wood after decades of expansion and contraction; it may have been exacerbated by a recent glazing retrofit [RECORD, Apr 1994, page 29], which meant the snow and ice loads were no longer being quickly melted by the replaced heat-leaking, single-paned skylights. It was certainly brought on by the record-breaking snowfall during the harsh winter of 1993-94. In any case, the loads finally overwhelmed the seat-of-the-pants structural design that Wright had counted on. An overnight deflection of two inches alarmed the Johnson Foundation staff enough to seek professional advice on how to proceed with repairs.

Continuing Education *This month's installment of the ARCHITECTURAL RECORD/AIA continuing-education series examines the use of innovative materials to stabilize a historic structure. Use the following learning objectives to focus your study. After reading this article, complete the questions (pages 186) and check your answers (page 188). AIA members may fill out the self-report form and send it in for two AIA Learning Units—Mark Scher, director, AIA Continuing Education Programs and Products.*

Learning Objectives: *After reading Wingspread and answering the following questions, you will be able to:*

- *[illegible] preservation philosophy and the compromises that led to the project's [illegible] methods.*
- *[illegible] that [illegible] innovative solutions to roof-loading problems.*
- *[illegible] of [illegible] as a recognized preservation programming tool explored [illegible].*

B.J. Novitski is a freelance writer specializing in architectural technology, practice, and education. She can be reached at bjn@efn.org.

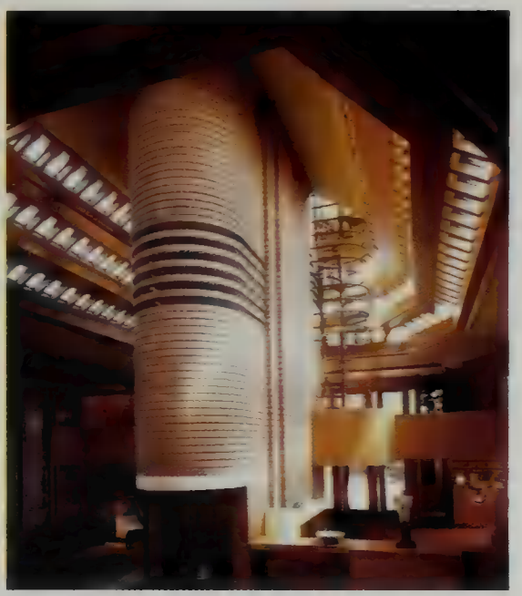
Merging with preservation ideals

A local firm suggested a repair strategy that would require tearing out the historic interior plaster and woodwork. The Foundation called for a second opinion from Alan Chimacoff, FAIA, and Stephen Diehl, AIA, of The Hillier Group. Together with New York City structural engineer Robert Silman and Princeton-based historic preservation consultant Annabelle Radcliffe-Trenner, they agreed on the importance of preserving those materials. Because the clay roof tiles were recent—expendable in preservation terms—it made more sense to work from the outside in and protect the original interior finishes. The question was how.

Chimacoff recalls that the team referred to Wright's own writings to understand his design intent. In his autobiography, Wright refers to Wingspread's roof as a "wigwam." Chimacoff points out: "It doesn't really look like one, so we tried to understand what he might have meant. The essence of a wigwam is that it has two kinds of structure: the stick structure and the membrane. The sticks give it its primary strength, and the membrane is a secondary structure that stretches and encloses."

In a brainstorming session, Chimacoff, Diehl, and Silman realized that they would need to reinforce the membrane (wood sheathing) stretched across the sticks (wood framing) of the lower roof. Diehl, who regrettably did not live to see the restoration completed, came up with the revolutionary idea of creating a reinforcement system without adding substantially to the roof's thickness. His solution was to create a hard fiberglass shell, like those common in boat building. Chimacoff notes that this extension of the sticks-and-membrane metaphor is consistent with Wright's conception of the building. The idea was relatively simple, but its implementation proved enormously complex. Part of the solution meant literally employing boat builders.

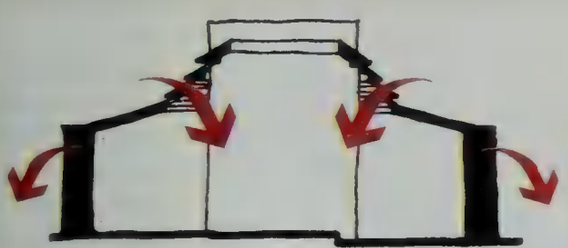
Contrary to traditional preservation ideals, bonding fiberglass to the existing wood sheathing would conceal that historic wood irreversibly. When Radcliffe-Trenner joined the team, she realized that whether such a strategy would be acceptable would depend on the Johnson Foundation's preservation philosophy. With her assistance,



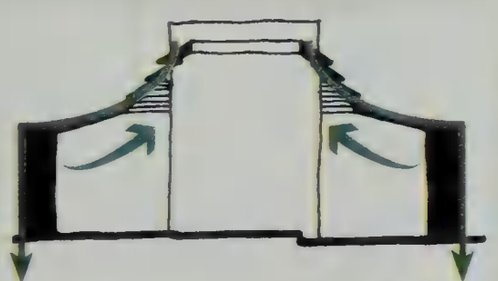
The shaped framing members that support the three rows of skylights were subject to unusual loading conditions and had begun to sag. Saving the skylights as well as delicate interior plaster of the signature great room was part of the challenge.

Foundation representatives engaged in analysis using the United Nations' World Heritage Site evaluation system. This system places emphasis on economics and current values as well as historic ones.

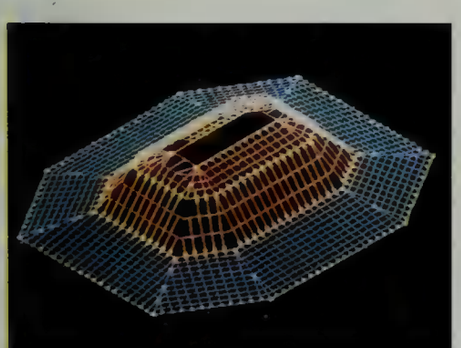
The Foundation arrived at four preservation priorities: to maintain Wingspread as a conference center; to ensure the safety of guests and staff; to protect historic structure, fabric, and design intent; and to maximize efficient use of energy and Foundation resources. These parameters helped the architects decide to work from the outside in; they would sacrifice the newer roof tile and concealed roof sheathing in order to reinforce the building's structure and preserve the interior finishes. They would forego a purist's approach to material selection in their use of high-tech materials. This plan was reviewed by Charles Montooth, of Taliesin Architects, who once worked with Wright. He concluded that Wright would have used such innovative materials himself if they had been available. "This was important," recalls Radcliffe-Trenner, "because

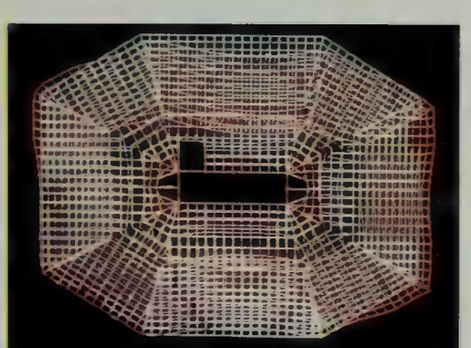


The building as designed put stress on piers and skylights.



After redesign, stresses were properly distributed.





The three-dimensional computer diagram (near left) shows Wingspread's upper and lower roof, joined by step beams. Before being repaired, the red lines (far left) outline the actual deformed roof shape against the blue lines of the Wingspread roof as designed by Wright.

we were able to use materials that were contemporary and fiscally responsible. We were able to find a balance between the building's historic value and the Foundation's current needs."

Building a boat inside a box

Carbon-reinforced fiberglass was chosen to stiffen the failing lower roof of the great hall. The carbon fabric is custom-woven with the proportion of strands in each direction specified by the engineer to accommodate the computed loads. To install it, the boat builders cut the fabric into pieces to conform to the irregular roof shape and dipped them in an epoxy bath. They laid the wet fabric down in staggered layers and used rollers to press out air bubbles. The 14 layers are only 1/2-in. thick but the composite forms a strong, stiff shell that bonds to and stiffens the original wood sheathing. Finally, for curing, the shell was surrounded by an insulated tent and subjected to a temperature of 140F for 48 hours. This technology was tested successfully on the roof of Wingspread's less prominent east wing before work began on the great hall's roof.

Because this shell is impermeable, conventional roof-tile nailing is difficult. So the architects adopted a California earthquake-resistant strap-tie technology to minimize nailing. Although the technology is not new, it was unknown in Wisconsin, adding one more kink to the already unconventional construction process. The impermeability of the shell has also raised concerns about trapping moisture in sheathing and framing. A moisture monitor is now permanently installed to warn against the dangers inherent in bonding a vapor barrier to the roof structure. The idiosyncratic zigzag-shaped skylight frame called for a very different solution. Wright may have tried to make the upper and lower roofs work structurally independently, without transferring any load to the skylight mullions. Although the skylights were eventually where the failure occurred, engineer Silman insists that Wright deserves a great deal of credit for his intuitive design. Silman's analysis, which Wright could not have performed, showed that Wright had probably misunderstood the nature loads of the two roof sections. The shallow slope of the lower roof



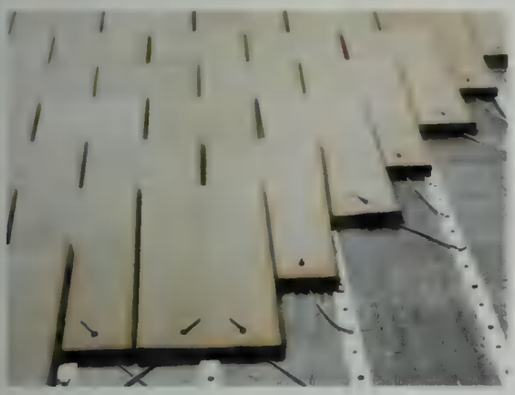
Temporary continuous bracing (left) was installed at the west end of the great hall, where the connections of some of the original stepped beams were so badly sheared that there was no framing supporting the skylights. The continuous brace was chosen to avoid point loading that had the potential to damage the original interior finishes.



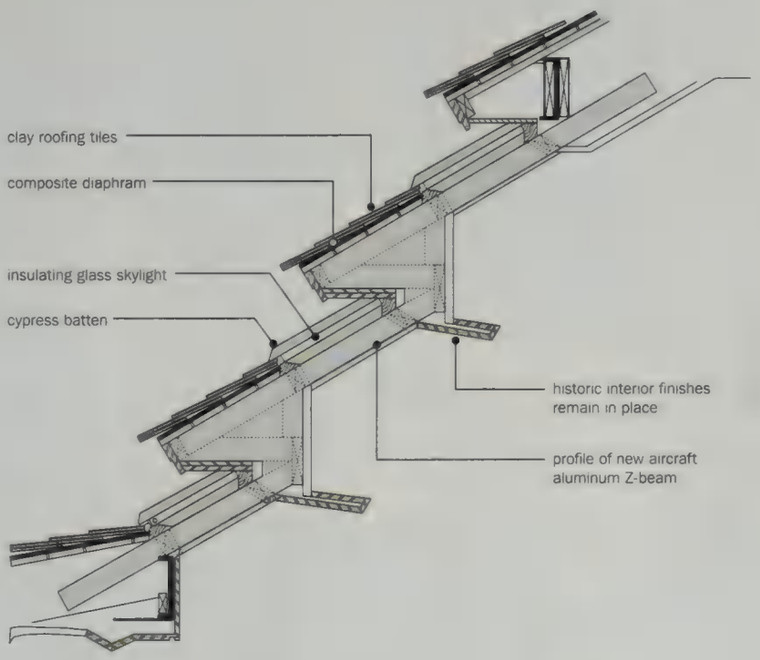


After a long search for the proper material, light, high-strength aircraft aluminum (above) was substituted for the nominal 2-in. beams that had previously supported the skylights. The temporary enclosure built around the great hall shows the extent to which the structure was protected from wind and snow. Once weather protection was complete, temporary shoring was removed (left).





Stepped layers of fiberglass fabric (left) are applied with their strands oriented so that the strength of the material is maximized. Because the hard composite material is impossible to nail through, roofing tiles were installed using ■ strap system (below left). This also minimizes penetrations through the composite shell.



ROOF SECTION

created an unexpected thrust on the brick piers and had tilted them out of plumb. Silman used a finite-element-analysis computer program to understand all the stresses in three dimensions. He explains: "Our mathematical determination was that the upper and lower roofs had to be tied together if we were going to leave the interior finishes intact. The only way to make that work was to add some support for the ring of channels at the base of the skylight." In other words, new replacement mullions needed to be devised that could carry the actual loads.

To replace the existing nominal 2-in.-wide zigzag framing, which was originally triangulated only by nailed tongue-and-groove sheathing, Silman tested numerous alternatives, including carbon-reinforced laminated-veneer lumber. This was strong enough in a few areas, but not at the points of highest stress. Steel would be strong enough, but was not sufficiently malleable to allow fabricators to match the shape of the now-deformed roof. Industry-standard aluminum would be more workable but couldn't carry the design loads. After much testing and investigation, Silman found a high-strength aluminum alloy that is commonly used in the aircraft industry but probably never applied to retrofit a historic wood structure. This material was rough-cut in a shop in the zigzag shape. Then it was modified in the field with ordinary carpenter's power tools and installed in place of the slim 2-by members that had made up Wright's original structure.

New technologies challenge construction coordination skills

Aircraft-strength aluminum and boat-building fiberglass technologies make a unique combination of trades on a building site. It was a monumental task to coordinate this effort. Meeting the challenge of making it all work was Johnson's construction coordinator Scott Weas and construction administrator Kirsten Kingsley of the Chicago-based historic-preservation consultant Vinci Hamp Architects. The delicate removal of the eight zigzag beams designated for replacement, for example, was first studied in detail. The team built mock-ups of the existing structure and prepared detailed, step-by-step instructions for the removal process. They wrote out the dozens of steps required, specifying which hand tools and/or power tools were permissible at each stage. Each step was double-checked and triple-checked before every surgically precise architect-supervised removal. The construction crew learned to respect the inviolability of the historic materials and did virtually no damage through construction.

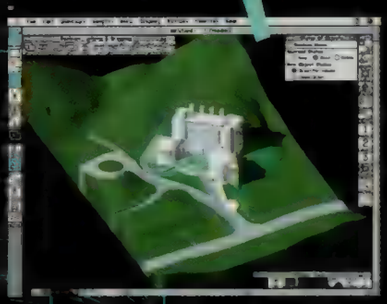
Some of the original plaster was removed, however, for investigative purposes. The plaster has been chemically analyzed and is being reproduced for patching. A stumbling block to repairs is that the original plaster, made with chalk from Wright's own quarry at Taliesin, was evidently never completely slaked. The resulting impurities, when exposed to moisture, might create spalling and further destruction to the finish coat. At this writing, the architects are investigating methods for patching the original plaster without letting it come into contact with moisture from the new plaster.

When the work is complete, Wingspread will not be restored precisely to its original condition. Deflection is part of the history of the building and will be forever visible from inside the great hall in the form of small gaps between some of the wood ceiling panels. However the team will have met its goal of making Wingspread a safe and usable building that is a product of 1930s genius and 1990s ingenuity. Johnson Foundation president Charles Bray, who has witnessed countless conferences in the great hall, concludes: "In all of life, place matters. What has struck me over the years is the degree to which that statement is specifically true of Wingspread and its effect on individuals who come together here. The building is an inspiration. About once a month, a conference participant will literally use these words: 'this place has charisma.'" The team is understandably proud of their accomplishment. And they know Wright would have approved. ■



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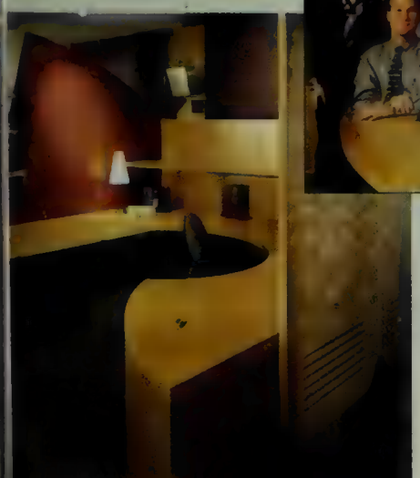
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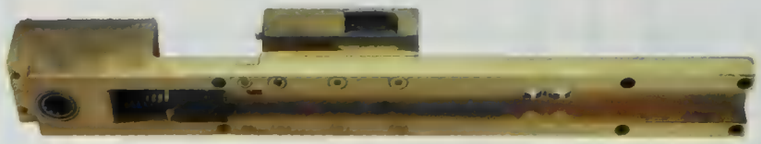
Winning design team (left to right): Amy L. Kleppe, James E. Young, John Forney and Stephen M. Busse.

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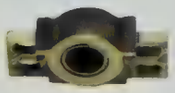
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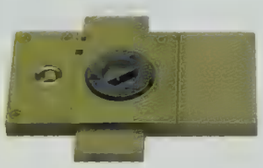
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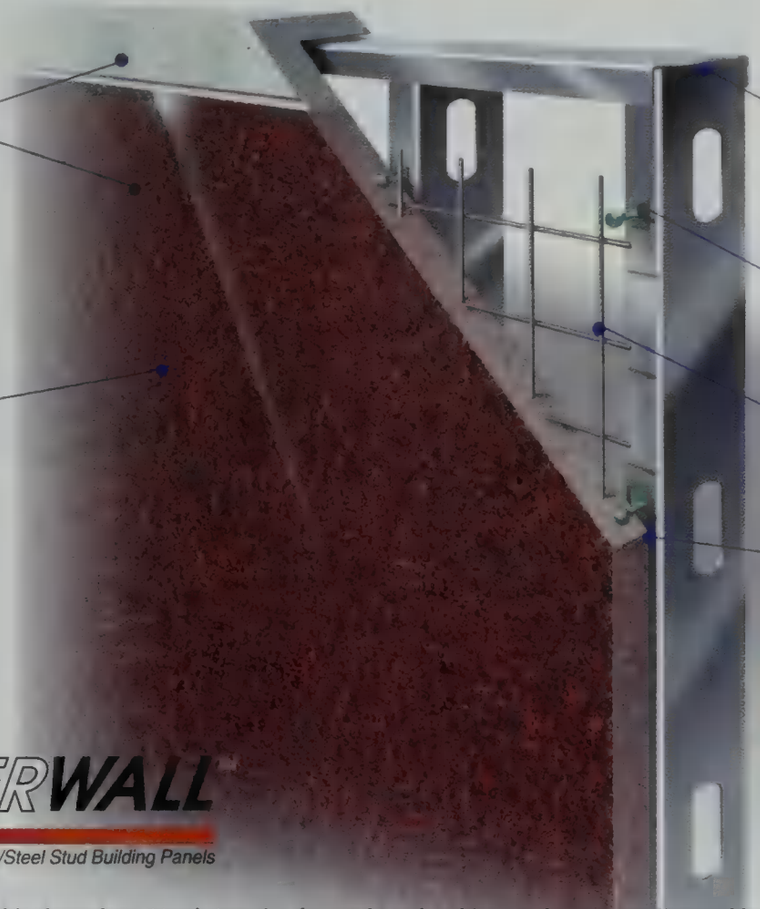
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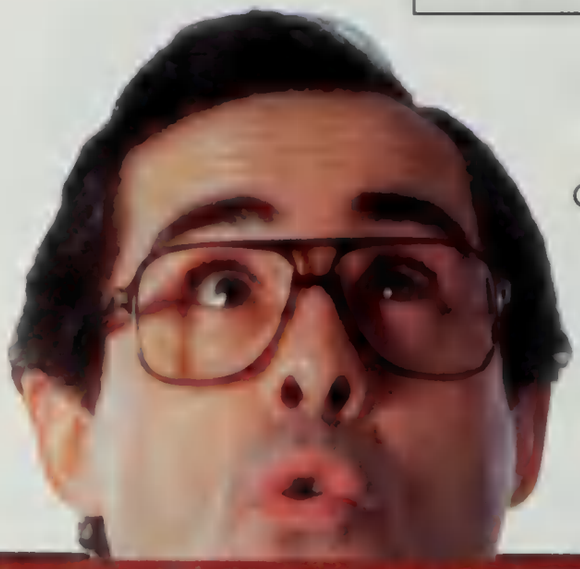
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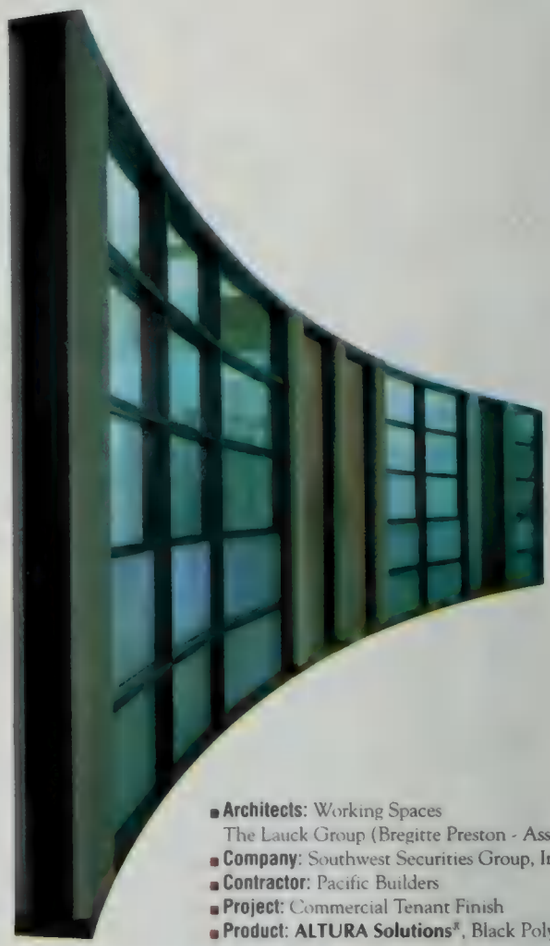
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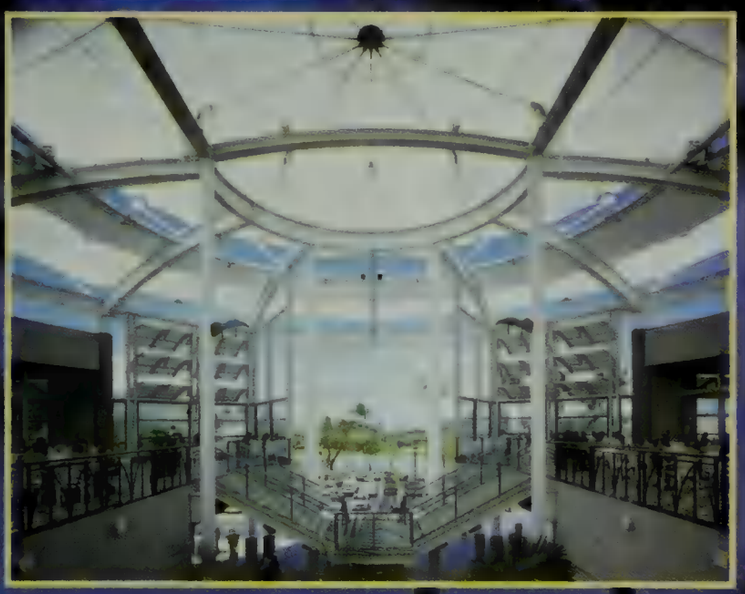
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CIRCLE 363 ON INQUIRY CARD

ENTERTAINMENT RETAIL

Theming vs. Design

FANTASY ARCHITECTURE HAS A DISTINGUISHED HISTORY, BUT MARKETING-DRIVEN, ESCAPIST EXPECTATIONS MAY BE CORRODING ACHITECTURE'S PUBLIC ROLE.

by James S. Russell, AIA



1

Seattle

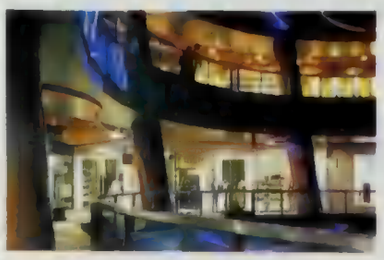
A 65-ft-high climbing rock beckons commuters to shop at Recreational Equipment Inc.'s downtown shrine to wilderness sports.



2

New York City

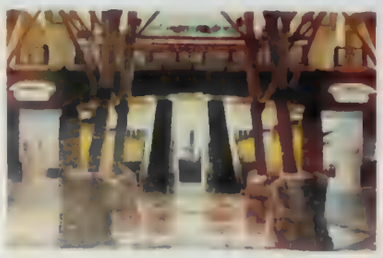
A dramatic multimedia-garlanded atrium distinguishes Nike's flagship store from its fantasy-driven brethren on the 57th Street entertainment-retail belt.



3

Fukuoka, Japan

Nature is the theme, but the Jerde Partnership International's gargantuan Canal City Hakata complex orchestrates an urban kind of theater.



4

Uncasville, Connecticut

Stage-set devices build a distinctly architectural experience in the Rockwell Group's Mohegan Sun Casino.

Call it the Letterman effect. Not long after late-night talk show host David Letterman began dropping watermelons and television sets onto New York City's West 53rd Street, swarms of tourists appeared. They hungered for a new kind of experience, not only to see for themselves the shops where Letterman had mugged with immigrant-turned-celebrity owners, but to partake in a television version of big-city glitter that has all but disappeared elsewhere. Just as Sixtus V overlaid an itinerary that routed pilgrims from church to church through the chaos of Medieval Rome, so NikeTown now anchors East 57th Street for this new kind of visitor, and stores for Warner Brothers, Disney, and Coca Cola mark the Fifth Avenue crossing. To the west, Planet Hollywood and the Motown Cafe beckon. High-tech signage of unprecedented extravagance lures crowds into a spruced-up Times Square, the Piazza San Pietro of a new economy. Here a phalanx of new stores, theaters, and restaurants is all but pushing out the old triple-X-rated diversions.

Welcome to the brave new world of entertainment retail. This merging of a selling environment with an entertainment venue through a themed or fantasy experience has energized the real-estate community like nothing since the festival marketplaces of the 1980s. Chains are building ever-more enticing stores in a Darwinian struggle to maintain market share. Since growth in retail square footage has for several years outstripped growth in consumer spending, someone's got to lose, and each chain hopes it's the other guy. Retailers also see more entertaining environments as luring shoppers who might otherwise choose home shopping by mail, television, and computer.

For architects able to adapt to its unique design culture, entertainment retail is a bonanza. But it is the design process that is the rub. Naysayers claim it is the end of Architecture As We Know It—Mickey Mouse at the controls of a bulldozer paving over that which is authentic with a tawdry asphalt of sanitized story lines. Champions see new opportunities for architects, since these clients want high-quality design talent to realize highly sophisticated projects. Also, investors and local officials see such projects as salvation for dying malls and sick downtowns. Critics too readily condemn the architecture of fantasy. Yet this trend does challenge orthodoxies held dear by architects, ones that exist for good reasons.

A trend juggernaut is born

Once a blip on the retail radar screen, confined to a couple of big cities and major visitor destinations, entertainment retail looks poised to grow

rapidly. According to Michael Rubin of MRA International, Philadelphia, which consults and does venture development in entertainment retail, "themed and theatrical dining represents one or two percent of restaurants, and will go to maybe 10 percent by early next century." Important for designers, such projects come in at relatively high costs per square foot and entail intense design effort.

Entertainment promises a new lure for troubled older malls chock-a-block with lookalike chains offering indistinguishable merchandise. Multiscreen cinemas, pumped up by exotic sound, giant screens, even motion-simulation technology, have replaced department stores as malls' anchor tenants (overleaf). Sega, Dreamworks, and MCA will fill empty store space with a new generation of video-arcade technology.

Then there is "bundled retail," a term Rubin has trademarked. It means uniting outlets from several categories with a themed glue of entertainment. You might assemble a Rainforest Cafe, a Dive!, and a Wildhorse Saloon to give patrons a choice of ecology, tropical fish, or country-western themes. CityWalk has succeeded as a kind of stage-set urban street connected to Universal's studios in Burbank; the Forum Shops, added to Las Vegas' Caesars' Palace casino, has become a Hadrian's Villa of retailing. Certain destinations can support pure-entertainment malls: a second CityWalk will appear in Orlando.

Of malls, strip centers, and urban projects, entertainment-oriented ones, says Rubin, "are probably 10 percent and will grow to 20 percent." The explosion of themed outlets in Times Square has convinced other cities that entertainment retail means salvation for downtown. Thus, Earl Swensson, Architect, is ushering in the Kansas City Power & Light Urban Entertainment Center. In Baltimore's Inner Harbor, Disney Imagineering will build a marine-biology exposition; an urban-entertainment center will replace a failed retail mall in a restored power plant.

The making of a mini-vacation

Players see powerful forces at work, particularly a growing public appetite for fantasy and escape from life's increasingly mundane reality. The 1980s shopping-as-leisure trend has evaporated in a decade of static incomes and long work hours put in by two-income and single-parent families. Now it is harder to find time to shop, and it is harder to mesh parents' and children's' schedules to manage the traditional summer trip or winter vacation. So patrons combine shopping *and* leisure. "A meal at a Wildhorse Saloon or Hard Rock Cafe is a six- or seven-hour mini vacation," observes Ron Lustig, senior designer at Earl Swensson, the firm responsible for Opryland (below) and some Wildhorse outlets. Faced with too little time and too much choice, consumers are increasingly choosing brand names that have a reputation for quality, a trend not lost on marketers. Brand mavens have discovered that stores, uniquely, could immerse patrons in an experience—one that offers a powerful means to imprint a brand name in the consumer's mind. And the only way to lure patrons into the experience is to amuse as well as sell.

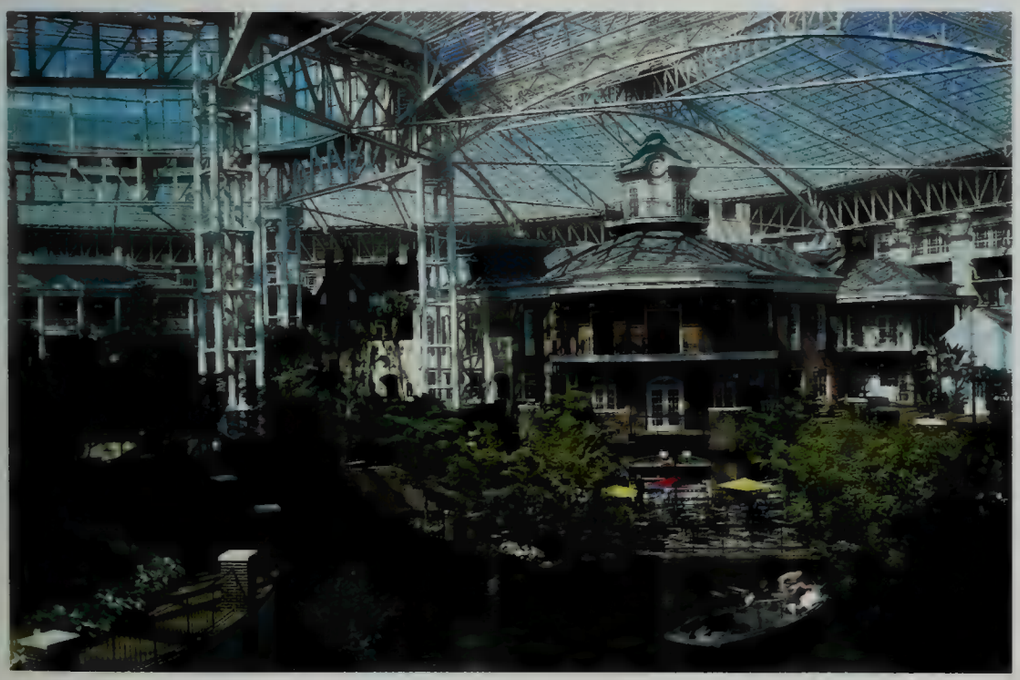




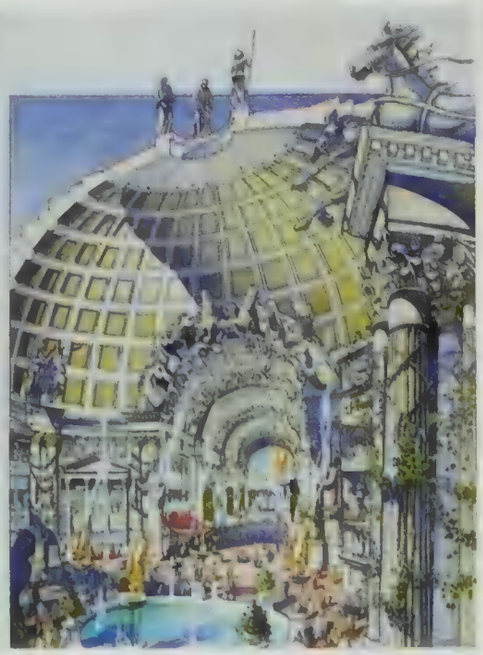
Architect Elkus/ Manfredi provided the architectural container and Disney Imagineering orchestrated the characters' "story" in the Orlando World of Disney store.

On the one hand, you could invent a brand connected to a widely desired experience (Planet Hollywood, which offers dining in the presence of paraphernalia actually used in popular movies). Or, you could extend the "equity" (marketing jargon) of an existing well-regarded brand name to a selling venue, as Coca Cola and Levi's have. "It's to immerse people in the product itself and how it relates to values and lifestyle," explains Rubin. He has enumerated client categories, among them entertainment (Warner Brothers, Sony, Disney), sports (NikeTown, All-Star Cafe), and lifestyle (Harley Davidson, Rainforest Cafe).

As urban life becomes more stressful, even treacherous, the



Earl Swensson, Architect, has repeatedly expanded Opryland, a themed convention hotel connected to the famed performance complex in Nashville, Tenn. Analysts talk about a hunger for unique, even indigenous experiences, but target consumers appear not to want too much adventure. Thus, a mansion from down-at-the-heels Natchez, Miss., may not see as many visitors as a replica in this mall-like environment (left). The latest Opryland addition includes restaurants featuring a Southern theme.



The spectacle designed into Caesars Maximus in Las Vegas by the Rockwell Group is typical of such all-entertainment destinations. Rockwell will also add 20 acres of entertainment retail to Disney's Pleasure Island in Orlando and has prepared a 1-million-sq-ft mixed-use concept for London's Battersea Power Station.



branded experience also succeeds by promising consumers a predictable and secure experience. The House of Blues in the upscale mall has none of the risks—real or perceived—of an inner-city juke joint. The Wildhorse Saloon offers what the country-western honky-tonk doesn't: a price, quality, and crowd that is known.

Architecture and the seductive experience

Critics have made much of the inauthentic "authentic" experience; the "indigenous" character that denotes locality without being it. This is not the stuff of which architecture is made, right? Answers are not easy. David Rockwell, whose firm, the Rockwell Group, is a leader in entertainment and themed design, unapologetically borrows techniques from movies and stage-set design, but says the work is fundamentally architecture. "We're building a series of spaces that craft a movement through a project," he explains. "It's a spatial experience and an architectural experience and it involves interacting with other people." The same "stone" wall may contain both the real thing and a fiber-reinforced plastic version, but Rockwell nevertheless compares the spatial drama he creates to that of a Luis Barragan or a Louis Kahn. "Look at the compression and expansion of space Edmund Bacon documented in *Design of Cities*. It's seduction, a way of teasing someone around a corner."

Indeed, fantasy design has a history, one in which architects have played an important part. At the turn of the century, big-city restaurants courted the carriage trade with lobster palaces. In New York City [illegible] was theater, and the elaborate menus could [illegible] with decor that was compared to the Hanging Gardens of [illegible]. Later, pleasure gardens and summer rooftop restaurants bloomed with faux shrubbery and rustic thatched huts. One sprouted atop Stanford White's Madison Square Garden; Midway Gardens was Frank Lloyd Wright's dizzyingly inventive version. Later, vaudeville and movie palaces—here Moorish, there Egyptian—infatuated America with a sweep of gilded stair or a ceiling covered with projected stars.

Many prominent architects have been involved in the current wave of theming. Tigerman McCurry did an early Hard Rock; Jon Jerde brought fantasy to San Diego's Horton Plaza; and Michael Graves invented the Dolphin and Swan for Disney.

Today, however, a store, restaurant, or amusement may be only one campaign in a vast product-launching invasion. The big corporate players now follow a formula developed by Disney. The company introduces new characters into the marketplace through an animated film. A theme-park attraction follows; then characters become products, "so that people can take away a piece of the story," as Wing Chao, senior vice president at Disney Imagineering, explains. The retail outlet is simply the last link in this orgy of synergy. The store or restaurant must toe the larger marketing line, which leaves little room for idiosyncrasy or local flavor.

Design for brand extension

Entertainment retail is not only a unique kind of design product, it calls for a different design method. Rather than consign programming and design to the architect, the owner usually adds the architect to a team that may include owner's representatives, theatrical lighting designers, real-estate consultants, audio/visual technologists, food-service concessionaires, fantasy-character gurus, and amusement-ride engineers. The design "story" may be "scripted" or "story-boarded," meshing it with the program. In Disney stores, characters "film a movie." This works "beautifully" in the 2,000- to 3,000-sq-ft boutiques built in malls, says Disney's Chao. When the company extended the idea to department-store scale at the 50,000-sq-ft World of Disney, the design team decided that Mickey and his entourage should embark on a world tour. Patrons don't necessarily "read" the storyline, says Chao, but "a story helps us unify the store." A Captain Hook figure conjures "booty" to boost jewelry sales. Tinkerbell beckons patrons to a girls' clothing area. "We're taking the wonderful Disney stories and adapting them architecturally," explains David Manfredi, partner at Elkus/Manfredi Architects, Boston. The firm planned, sited, and designed the base building as well as fixtures and many finishes for the

Anchoring entertainment-oriented venues, multiplex cinemas get upscale styling. The Rockwell Group designed this 20-screen Sony Star Theatre prototype for Southfield, Mich.





Tishman Realty's E Walk is among projects that jump-started New York's dying 42nd Street. A 13-screen entertainment/dining complex (D'Agostino Izzo Quirk, architect) fronts Arquitectonica's hotel tower.

"World" store at the Disney Village Marketplace outside the company's Orlando theme park (previous page). Elkus/Manfredi added to the story development, but only Disney's Imagineering team decides characters' roles. They are high priests of a sort, guarding mysteries within the Citadel of the Brand.

One reason for architects' subsidiary role is that design energy is expended more to realize the project's marketing and brand-extension goals than to solve such architectural issues as flow, form, and well-executed detail. While architects derive satisfaction from innovation—from being bold, unique, adventuresome—entertainment-retail projects lure traffic by projecting familiar and comfortable images; they surprise in unchallenging ways.

Marketing expectations consume the public realm

Architects can play by these rules, and many do, successfully. But, as pundits have long warned us, the gathering ubiquity of themed environments is infecting the public realm with marketing-driven expectations. Public institutions with a role to educate already recognize that they are competing with entertainment companies for patrons' leisure time and dollar. Museums (that is, those that can afford to) are installing more elaborate crowd-pleasing exhibits and interactive devices. In such circumstances, commercial messages risk subsuming educational ones. The educational "story" of Disney's Epcot has always been but a veneer laid over a brazen product sell. Now the Bronx Zoo—known not only for its extensive research and conservation activities, but for the powerful conservation message it delivers to patrons—has hired the Rockwell Group to add excitement to concessions and graphics. Will parrots push pretzels? And Disney, moving this "edutainment" trend one step further, will build its own zoo.

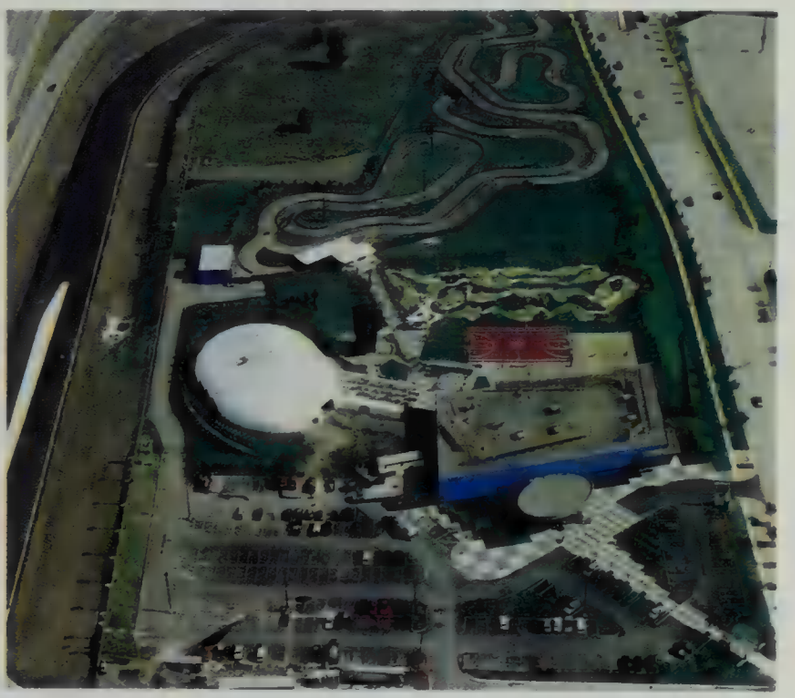
Those who work on public projects frequently criticize the lack of public patience with innovation (whether esthetic or functional) and unfamiliarity. Indeed, if escapist experiences are what it takes to lure people away from TV sitcoms and computer games, nurturing literacy for architecture entailing values that are not specifically commercial becomes a Sisyphean feat. The architect's skill as maker of place-specific solutions becomes no longer useful. As critic Michael Sorkin noted (in *Variations on a Theme Park*, his 1992 collection of essays), "The loosening of ties to any specific space" already marks today's city. "The new city replaces the anomaly and delight of [traditional ones] with a universal particular, a generic urbanism inflected only by applique."

A fickle public easily sated by yesterday's sensation creates imperatives that pull design back to territory more familiar to architects, however. "There is a constant challenge to entertain at a higher level and in a more exciting way," says Disney's Chao. The so-called location-based entertainment trend trades on urban places that are identifiably fun. Thus Times Square becomes a kind of brand, a "bright lights" armature to which retail is attached. In San Francisco, Sony is building a retail, cinema, and restaurant complex that takes advantage of the traffic generated by the museums and performing arts facilities at Yerba Buena Gardens. Baltimore is adding museums to its Inner Harbor mix.

Why is entertainment retail moving into the cities? MRA's Rubin theorizes that people flock to these places because suburbanization erased distinctly communal urban places. The crowds are part of the appeal. If you two-step at a Wildhorse Saloon, you might be seen on the Nashville Network (both owned by Gaylord Entertainment, naturally). Your exploits at Sega's Playdium (below) can be appreciated by onlookers on big video screens. The instinct to see and be seen seems to be reasserting itself, the making of a kind of public performance out of eating or shopping that is at base the poetic of the city. "We need places of connection and identity," Rubin observes. "Today, the sense of regional or place identity is pretty much limited to a sports franchise."

It's clear that architects can steer some traditional architectural and urban values into entertainment-retail venues. Thus NikeTown (pages 100-103) distinguishes itself by eschewing fantasy characters and narrative for spatial contrasts, harder-edged "urban" materials, and screening devices that alter the play of light and views. Canal City Hakata makes urban theater its centerpiece (pages 110-115). Architects can take perverse pride in Las Vegas' New York-New York casino hotel (pages 76-79) since it is but an amalgam of the real place's most distinguished buildings. The Guggenheim is missing because the Taliesin Foundation, guardians of the Frank Lloyd Wright brand, wouldn't let it be copied. ■

Kuwabara Payne McKenna Blumberg sculpted Sega City @ Playdium, Mississauga, Ont., dining, video-game, and amusement complex.



Recreational Equipment, Inc., Seattle, Washington

REI'S SEATTLE FLAGSHIP STORE EMPHASIZES CUSTOMER PARTICIPATION AND COMPANY HERITAGE.

by Douglas Gantenbein

Project: *Recreational Equipment, Inc. Seattle, Washington*
Owner: *Recreational Equipment, Inc.*
Architect and interior designers: *The Mithun Partners—Thomas Emrich, AIA, project manager; Bert Gregory, AIA, project designer; Rob Deering, AIA, project architect; Hao Casey Huang, Ken Boyd, architects*
Consultants: *RSP/EQE (structural); McKinney & Associates; Madsen Electric/Cross Engineers (electrical); McDonald-Miller (mechanical); KPFF (civil); The Berger Partnership (landscape); Candela (lighting)*

If there is any doubt that retail survival entails offering a higher-visibility and more involving purchasing experience, Recreational Equipment Inc. (REI), proves the case. It didn't build this 98,860-sq-ft, $30-million store to please stockholders or private owners. It has neither. It did recognize that the retailing environment required a radical departure for this seller of outdoor equipment known for its no-frills, even geeky selling style.

More importantly, this new Seattle flagship store is designed around the idea that prospective selections should be tried before purchase. So rock-climbing shoes can be tested on a 65-ft climbing pinnacle, boots and mountain bikes on a 470-ft outdoor trail; rain gear in a glass-enclosed stall that mimics—often superfluously—Seattle's infamously wet weather; and camp stoves under a laboratory-like vented hood. All this in a big, welcoming building that tries to straddle the history, present, and future of one of the more unusual retailers in the United States.

A cooperative

REI is unusual in that it is a cooperative, not a publicly or privately owned enterprise. Many of its 4 million member/customers take a proprietary interest in the company, voting on a board of directors and eagerly anticipating an annual dividend equal to about 10 percent of their purchases.

While REI has no competition for the wide range of outdoor merchandise it offers, it feared becoming road kill on the category-killer superhighway. In the past it dabbled in the kind of lifestyle outdoor wear that another famous Seattle-based retailer, Eddie Bauer, has made its focus. REI has decided to stick with "muscle-driven" outdoor sports, but still fears that mail order or an incipient climbing-gear chain or bicycle-shop chain could nibble away at its constituency.

REI's architectural roots hardly predict the spectacle it has now built. Until the mid-1970s its only store was a rambling, 37,000-sq-ft structure on Seattle's Capitol Hill that had grown by burrowing a warren of corridors, ramps, and staircases through a collection of warehouses. In 1938, REI got its start from the back of a gas station when a handful of Seattle mountaineers bought direct from Europe climbing equipment that wasn't available locally. Now, with 46 stores, REI has annual sales of $500 million.

Re-imagining a retailer

While not wanting to leave its humble roots behind, Coop executives asked architects from Seattle-based Mithun Partners (several of whom were REI members) to rethink many aspects of the way the coop had done business when planning began in 1993.
Because REI's wares often are complex, the coop wanted to introduce interactive ("edutainment" is the preferred moniker) displays to help customers understand features and



1. *Courtyard*
2. *Entry stair tower*
3. *Terrace under roof*
4. *Climbing tower*

Douglas Gantenbein is the Seattle correspondent for the ECONOMIST magazine and frequently writes about architecture. He has been a REI member for 23 years.



The warehouse-like eastern facade (above), with its clerestory windows and oversized signage, takes a Robert Venturi-like, billboard approach to attracting commuters on busy I-5. The southern and southwest ends of the building's exterior (below) are robust and energetic, evoking a forest, and bring a strong, almost Classical rhythm to the facade.





The austere west wing of the building (left) houses administrative offices on the lower floor and retail on the upper floors, and is in keeping with the mixed-use character of the neighborhood. The climbing tower (right) housing the world's largest freestanding climbing rock, greets customers exiting Interstate 5 for the store. The climbing and entry towers (opposite) are off-axis to the rest of the store, acknowledging that the store is sited where the orientation of the street grid shifts from one that parallels the southwest-facing waterfront to a north-south grid. The terrace (below) gives customers what they love: the outdoors.

performance. The coop asked for more parking (the Capitol Hill store had only 33 spaces) and asked the architects to make the building's construction and design reflect the coop's environmental goals. The building also was proposed as a merchandising "laboratory," where selling concepts could be tried, then moved out to other stores if successful. The architect agreed to help foster REI's environmental goals in both construction and final product. Finally, the coop asked for a warm and comfortable space that would become an involving destination—"a clubhouse for the membership," as REI president and chief executive Wally Smith puts it.

The 2.1-acre site backs up to the freeway at the edge of downtown making this location seem somewhat antithetical to being "outdoors." It made sense, though, for its visible, central location is easily accessed by car and bus and not far from the city's retail core. Mithun partners took advantage of the site by making the freeway side a billboard, with an 85-ft, glass-enclosed tower that houses REI's climbing pinnacle, the building's visual pivot, beckoning passing motorists.

On the north and west, the entrance to the parking garage, loading dock, equipment-rental entrance, and other elements reflect the character of the surrounding mixed-use neighborhood.

REI's goals for the store begin to reveal themselves through the path customers take after parking in the 580-space, below-grade garage. Psychologically separating customers from their cars, the circulation path takes patrons outside, on either a series of stairs, or an elevator to a walkway overlooking a landscaped garden, where a waterfall adds a wilderness reminder and effectively drowns out freeway noise.

Visitors next enter a large vestibule that terminates visually in the spectacle of customers (belayed by REI employees) scaling the climbing pinnacle, the world's largest free-standing artificial climbing rock. The vestibule is canted in plan, aligned with a shift of street grids that takes place at the site. In this vestibule, members retrace REI's history in displays of photographs and artifacts, including REI equipment used by the first American expedition to conquer Mount Everest in 1963.

Emphasis on specialty shops

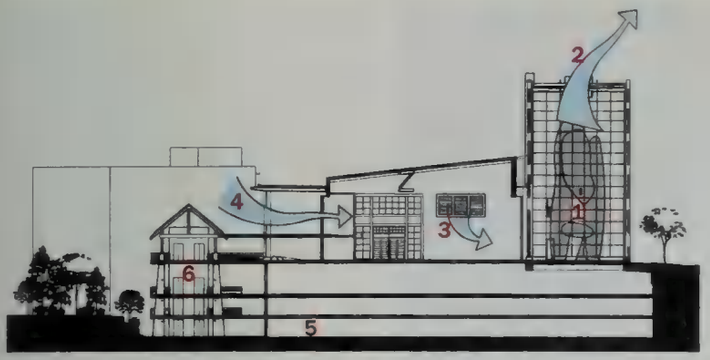
This first floor is organized to reflect REI's evolving emphasis on five "specialty" shops: camping, mountaineering, skiing, kayaking and canoeing, and bicycling. Ramps reminiscent of those that connected the meandering Capitol Hill store carry customers from shop to shop. Stairways that climb around groves of vertical pine logs (culled during regular thinning, not clear-cut) lead up through an atrium to the second floor and footwear, apparel and children's clothing departments.

For all its size and elaboration, REI had a strict budget for the building to ensure that members did not pay for it through lower dividends. Mithun parlayed a limited palette of concrete, rough wooden and steel beams, and corrugated steel into a building that is visually rich and physically tactile. "The structure is the character of the building," says Bert Gregory, AIA, managing principal for Mithun, "like the climbing equipment REI sells that is very functional but has real beauty too."

Exposed beams with carefully detailed support cables and turnbuckles add visual variety. This effect is heightened with evocative details: ice axes are bolted to doors as handles, while metal hooks used by rock climbers serve as clothing hangers in changing rooms.

REI customers also find an ample dose of what they find most appealing in the first place—the





STACK EFFECT IN UNCONDITIONED SPACE



SOLAR PREHEAT

40 FT.
12 M.

1. *Climbing rock*
2. *Hot air exhaust*
3. *Recycled air from conditioned space*
4. *Cool air intake*
5. *Parking*
6. *Entry*
7. *Early morning preheat*
8. *Retail*
9. *Loading dock*
10. *Meeting room*
11. *Rental*
12. *Administrative*



The store emphasizes "edutainment," allowing customers to try out the goods before they buy them. Possibly the best example of this is the climbing rock (below), where a climber might test boots or other gear. Another display (right) illustrates the history of REI.



1. *Landscaped court yard*
2. *Entry stair tower*
3. *Reception*
4. *Climbing rock*
5. *Fireplace*
6. *Camping*
7. *Skiing*
8. *Paddling*
9. *Biking*
10. *Checkout*
11. *Open to below*
12. *Viewing balcony*
13. *Apparel*
14. *Cafe*

outdoors. A second-floor restaurant and 200-seat meeting room adjacent to it have a sweeping view not only of the Seattle skyline and Space Needle, but also of the Olympic mountains and Puget Sound.

Keeping it green

In keeping with REI's green goals, about 75 percent of the demolition debris was either re-used in the new building, recycled, or sold for salvage. Other environmentally friendly touches matched REI's desire for simplicity, including leaving steel unpainted, and choosing industrial-grade engineered-wood beams sourced from second-growth forests. Retail-area countertops were made of recycled newspaper and soy bean composite; bathroom countertops of waste wood composite.

To meet energy-consumption considerations, the interior temperature, for instance, is permitted to vary by as much as five degrees throughout the store (most retailers seek a one-degree variance). The stack effect draws excess heat out the top of the building; both techniques allowed a lower-capacity hvac system. The clerestory windows are clear glass, rather than [illegible] glass, to help with [illegible] warm-up; shades cut heat [illegible] sunny days. And the [illegible] thermally isolated from the main interior to reduce the building volume that requires heating or cooling. The success of the energy-conservation program has qualified the building for several Washington state rebates.

Meeting retail objectives

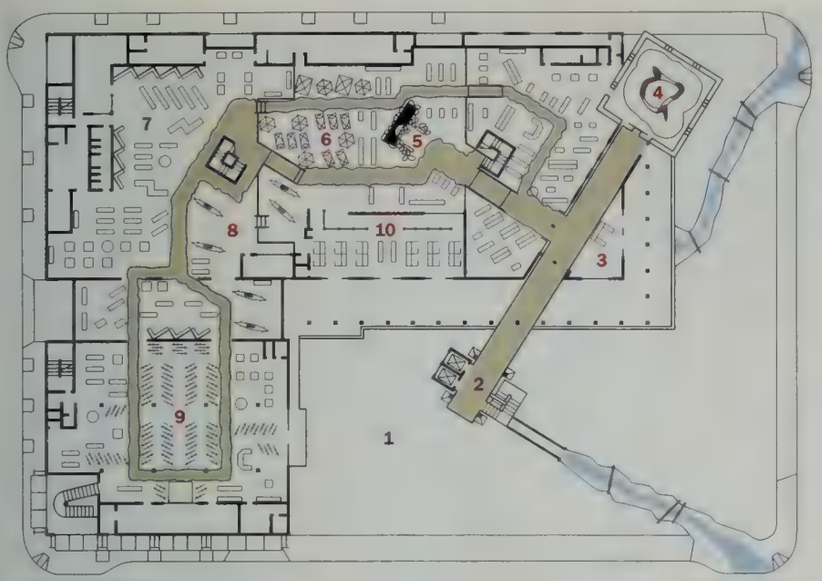
There was some grumbling that the store has departed too far from REI's spartan roots or that its evocation of the not-too-distant outdoors is ersatz and that the try-before-you-buy devices are gimmicky rather than useful. But the new flagship has been a stunning success for REI. Sales are close to double that of the old main store, says Jerry Chevassus, retailing manager for REI, and customer traffic has been so great that 50 percent more staff are employed than originally anticipated. That the store has become a tourist attraction on a par with the Pike Place Market suggests that REI has fulfilled its goal of reaching a broader customer base and competing with niche retailers of outdoor equipment. And its 80,000 sq ft of selling space has enabled REI to offer the kind of stock its members could previously only dream about.



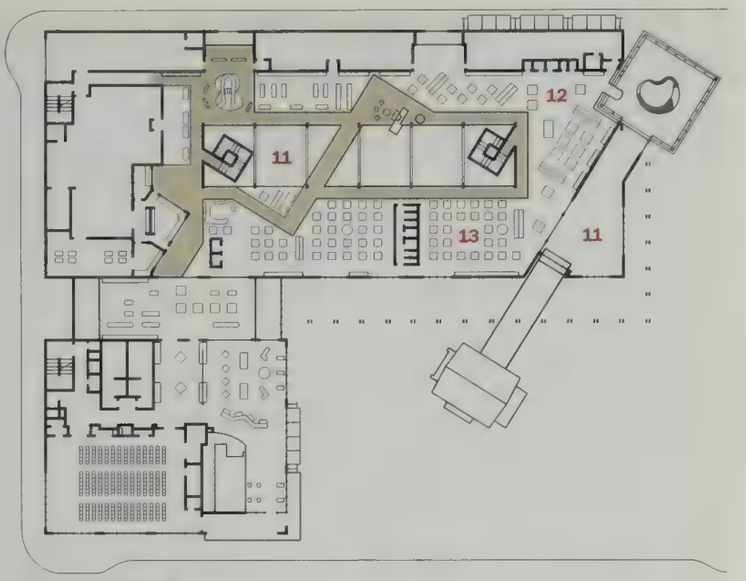
The cooperative is already planning to duplicate the Seattle store's size and features in other major markets: Minneapolis, Chicago, Atlanta, and San Francisco are other prospective locations. Although the Seattle store is a major departure from REI's past, it does appear to reflect its customers changing tastes. Climbers, who once prided themselves on the number and remoteness of peaks they'd scaled, have now made climbing gyms a local fad. ■

Manufacturers' sources

Curtainwalls, doors, and windows: *Vistawall*
Metal roofing and cladding: *BHP*
Glazing: *PPG*
Lighting: *Staff, LiteControl, Kim, USI Columbia, GE*
Laminates: *Nevamar; Wilson Art*
Paints and stains: *Sherwin-Williams*



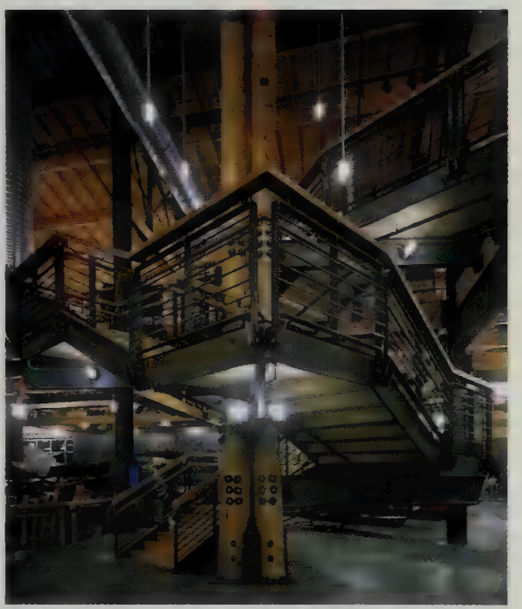
FIRST FLOOR PLAN



SECOND FLOOR PLAN

N ← 0 40 FT. 12 M.







Just inside the front door (left), customers are greeted by the warmth of a massive fireplace. The rugged palette of materials—weathered steel, second growth pine, and boulders—extends inside from the exterior. The paddling area (above) is one of five specialty shops in the store.

NikeTown New York City

NIKE'S FLAGSHIP STORE INTEGRATES ARCHITECTURE INTO AN ALL-ENCOMPASSING BRAND-REINFORCING EXPERIENCE.

by Virginia Kent Dorris

Project: *NikeTown, New York City*
Client: *Nike, Inc.*
Architectural, Media, and Conceptual Design: *Nike Design Team—Gordon Thompson, vice president, design; John Hoke, creative director, image design; David Poremba, media design director; Mark Mullen, retail media director; Val Taylor Smith, image design director*
Architects: *Brian McFarland, Michael LeClere (New York City); BOORA Architects (Portland, Ore.)*
Engineers: *Thornton-Tomasetti (structural); Edwards and Zuck (mechanical/electrical)*
Project Manager: *Bennis & Reissman*
General Contractor: *F.J. Sciame Construction Co.*

If selling sneakers can be elevated to an art form, Nike has done it with the creation of its new flagship store on East 57th Street in New York City. The athletic footwear giant has erected its latest NikeTown, a simultaneously nostalgic and high-tech retail monument to sports and sports equipment, near Fifth Avenue in one of the world's toniest and most expensive shopping districts.

Eight years in the planning, the NikeTown building was constructed on a site formerly occupied by the Bonwit Teller department store. Nike razed the original structure to start fresh. "We looked at tons of other sites, but the first four floors of a skyscraper would never say what we wanted to say," explains Gordon Thompson, Nike vice president of research, design and development, who headed the store's in-house design team.

Architecture as marketing tool

The NikeTown building is puzzling as a piece of architecture at first glance, but makes sense when considered in the light of its purpose: to demonstrate Nike's prominent place in the world of sports, and to generously display the breadth of Nike products. To help create a connection to New York City's architectural and sports history, Nike designers modeled the building's facade and exterior shell on the image of a pre-war, New York City high school gymnasium. The NikeTown building—with its artificially aged wood floors, exposed-brick walls, gym-mat-covered interior columns, and multi-story arched windows protected by wire-mesh—is a light-hearted assemblage of bygone schoolhouse details.



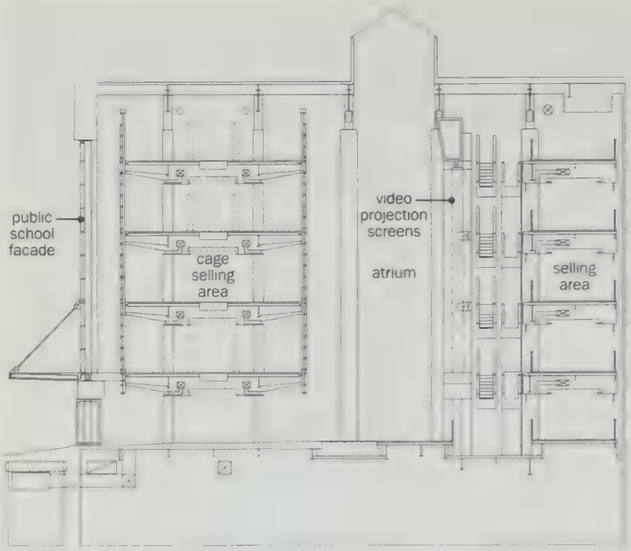
Superimposed within this nostalgic shell, though, is a futuristic glass-and-steel structure that bridges the "old" to showcase the latest Nike sports technology and equipment. A five-story, skylit central atrium (opposite) dominates the space. Meant to evoke a stadium or arena, the atrium is darkened every 20 minutes to broadcast short Nike-related sports films on a three-story-high video screen.



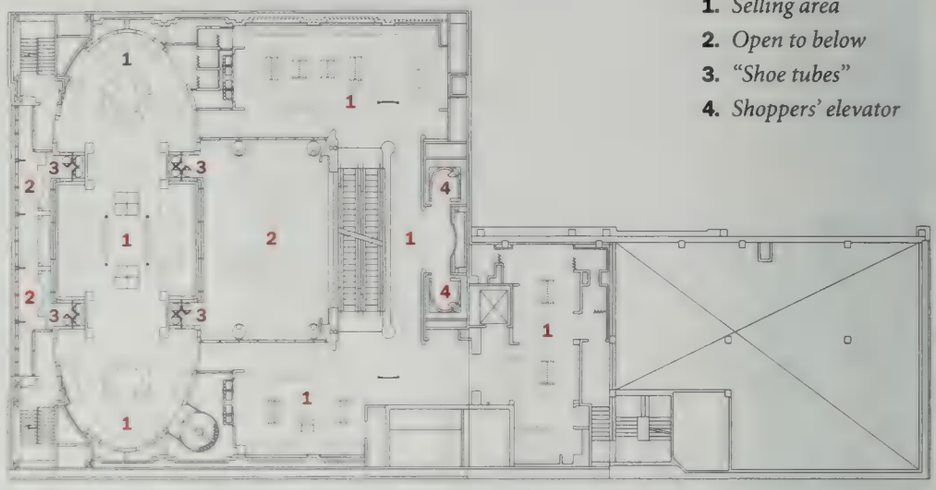
Glass-block-enclosed changing rooms (above) invoke both school gyms and high-tech athletic-wear design. Nike broadcasts an image-building film on a three-story screen (right) that unfurls from the top of the building's central atrium. Skybox-like windows on the atrium (facing page) open automatically during film showings to increase a feeling of participation.

Virginia Kent Dorris is a freelance writer who lives in Brooklyn, New York and writes frequently about architecture and engineering.





NORTH-SOUTH SECTION



FLOOR 2-5

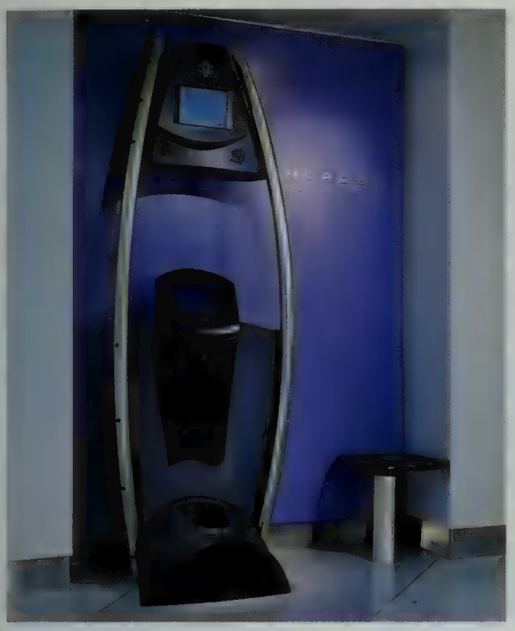
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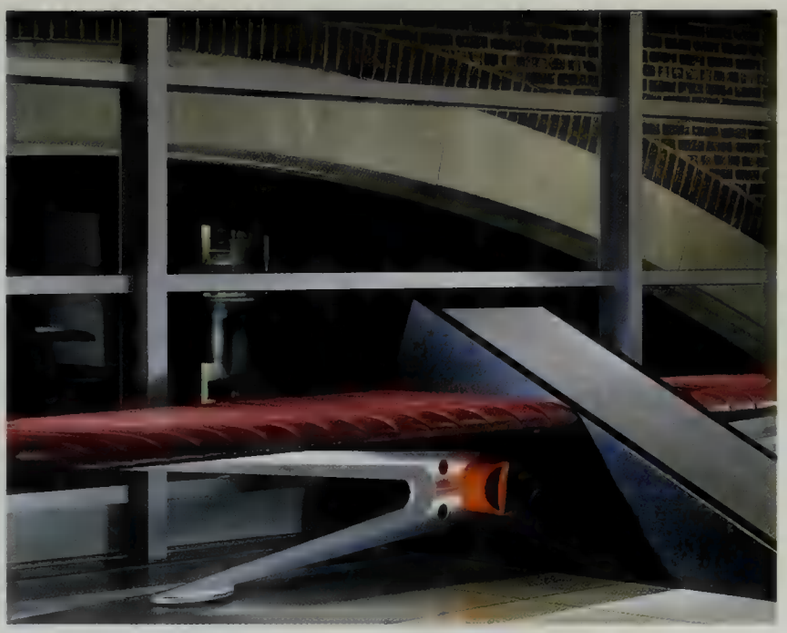
1. *Selling area*
2. *Open to below*
3. *"Shoe tubes"*
4. *Shoppers' elevator*





Technology that supports Nike's line of women's shoes (above) is highlighted by in-floor educational exhibits (left). New shoe models revolve in futuristic, columnar display cases.





New Nike-developed measuring device (far left) analyzes a customer's foot to determine the optimal shoe size and style. High-tech bench and shoe-fitting area on NikeTown's top floor (left) contrasts with aged brick wall and arched window of gymnasium-style building shell beyond.

Nike claims to have jump-started the trend of using an immersing retail environment to tell a brand's story in 1991 with the opening of its first NikeTown store in the company's home town of Portland, Ore. Rather than simply serve as a container for the company's message and product, the building itself is an integral part of the message. "We're using architecture as a communication device for a brand," says Thompson.

Reliance on in-house design

Considering that the store uses such architectural gestures as procession, compression and expansion of space, and plays of space and light, the architects, ironically, played a secondary role. Because the accurate telling of the brand story was the prime goal, the decision to design the building in-house was almost automatic. Indeed, Nike's team, supervised by Thompson, is involved not just in architecture, but in every aspect of Nike design, from footwear to graphics. The design team also included John Hoke, Nike's image-design creative director, whose work extends to trade shows and multi-media presentations. Though both men were trained as architects, neither is registered; local architects and Portland-based BOORA executed the project.

Unlike most retail stores, where merchandise-display space is maximized, telling the company story is the top priority at NikeTown. Only half of the 66,520-sq-ft of retail space is occupied by for-sale items. The rest is filled with exhibits developed to reinforce the notion of Nike's solidarity with winners—including a trophy case housing Carl Lewis' nine Olympic gold medals—and interactive exhibits touting Nike technology. One display showcases 20 types of airbags from the soles of Nike shoes, and a companion display blows "Nike air" at the consumer (implying shoe-borne flight). "We need NikeTown stores to carry the Nike story," says Thompson. "If the customer buys a product at the NikeTown store or goes down the street to buy it at Foot Locker, either way, we win."



A vertical shoe tube (at rear of photo) that brings shoes up to customers from basement storage areas, lends a high-tech touch to a shoe fitting area.

Marketing, with a wink

Ubiquitous clocks, stopwatches, and the company's "swoosh" logo attest to a kind of obsessiveness about the message, carried over even to tongue-in-cheek gestures. P.S. 6453, the number of the fictitious New York City "school," corresponds to the word "Nike" on a telephone keypad. The school's fictitious home team is the Knights (the "team" scoreboard was placed at the rear of the store), a reference to Nike founder and CEO Philip K. Knight.

Most visitors spend about 45 minutes touring NikeTown, according to a company spokesperson. Customers obviously are drawn, in part, by the store's entertainment value, though Thompson downplays its role. "Entertainment as an end-all, be-all, in a store is pretty dumb," he says, stressing that entertainment in a retail setting must be coupled with strong products and service in order to succeed. At NikeTown, in addition to the big-screen presentations, customers can watch live broadcasts of sports events on a series of video screens, spin a roulette-type device to learn about sports heroes, hit a punching bag, or look through an old-style viewfinder at the trip of a mountain-bike rider. Nike plans to change these displays several times a year to maintain their novelty.

But even without changing the exhibits, Thompson and Hoke hope that the building's design, focused inward on the atrium and the virtual and actual activity taking place within, will help maintain a sense of excitement. When the store is crowded, people huddle together to watch the big screen, sharing a noisy, collective experience. "You come to feel a part of something, scripted or unscripted," says Thompson. "It's something like going to a sports event." ■

Manufacturers' Sources
Display fabrication: *Exhibit Group*
Millwork: *NJS*
Terrazzo: *Magnum Inc.*

Mohegan Sun Casino Uncasville, Connecticut

USING NARRATIVE THEMES BASED ON NATIVE MOTIFS, A DESIGN TEAM ORCHESTRATES A RULE-BREAKING ARCHITECTURAL EXPERIENCE.

by Mark Alden Branch

Project: *Mohegan Sun Casino Uncasville, Connecticut*
Client: *Mohegan Sun*
Concept and Interior Architect: *Rockwell Group—David Rockwell, principal; Jay Valgora, director of design; Paul Vega, David Fritzinger, Suzanne Couture, Masako Fukuoka, Linda Laucirica, Julia Roth, Eve-Lynn Schoenstein, Jeanne Valdez, Alice Yiu, interior design; Carl D'Alvia, Robert Ashton, Ehab Azmy, Alex Brown, Howard Chang, Rosa Maria Colina, Eric Epstein, Masako Fukuoka, Maria Teresa Genoni-Alvarez, Niels Guldager, Chin Lee, David Lefkowitz, Alex Li, David Mexico, Tom Pedrazzi, Chris Pollard, Joe Richvalsky, Robert Robinowitz, Alex Ross, Sally Ross, Michelle Segre, Paul Shurtleff, Michael Silver, Nina Stern, Cathy Taylor, Raymond Tom, Sam Trimble, David Wilbourne, Lorrin Wong, staff*
Architect: *Brennan Beer Gorman/ Architects—Hank Brennan, AIA, partner-in-charge; Mario LaGuardia, AIA; Marc Gordon, Alan Infante, Nick Baratto, Greg Galford, Ernie Acosta, Sarge Gardiner, Louis DiFusco, Marlon Fernandez, Tony Layco, Ed Descalzo, Katie Brennan Smith, team*
Engineer: *DeSimone, Chaplin & Dobrin (structural); Lehr Associates (mechanical, electrical, plumbing)*
Consultants: *Mohegan Tribe (tribal); EDSA (landscape); Focus Lighting (lighting); David Jacobson Associates (Casino)*
Construction Manager: *Morse Diesel*

Short of changing the odds, the only way casinos can compete with one another today is to provide more exotic venues in which their customers can lose money. This explains the new phenomenon of casino as fantasy environment—owing more to Walt Disney than to Damon Runyon. The trend is tailor-made for New York City architect David Rockwell, whose Rockwell Group, best known for themed restaurant interiors, designed the Mohegan Sun Casino (their first) along with architect Brennan Beer Gorman, also of New York.

The Mohegan Sun got its start when London-based entertainment magnate Sol Kerzner, whose Sun International owns such properties as South Africa's flamboyant themed resort island of the Lost City, helped organize the descendants of the Mohegans, a largely defunct tribe of woodland Indians in southeast Connecticut. Together they built a casino to compete with Connecticut's other casino, built in nearby Ledyard five years ago by the Mohegans' old rivals, the Mashantucket Pequots.

The Mohegan Sun's 240-acre site included a 400,000-sq-ft building, which in its former life was a nuclear-research facility. After a false start with one architecture firm, Sun hired Brennan Beer Gorman as building architect in spring of 1995. They held a limited competition for the interiors and theming of the casino, which then was conceived as a full-scale resort, with entertainment venues and a hotel. The Rockwell Group was invited to compete.

Mark Alden Branch is a senior editor at I.D. magazine.





Native motifs scaled up

Rockwell's design modus operandi is to develop a "narrative" or theme for a project that will shape its design. For the casino competition, they took a crash course in Mohegan history and culture, talking to tribal historians and poring over the few existing tribal records. Mohegan architecture consisted of small structures such as wigwams and long houses, which the firm quickly decided could not be translated effectively to the scale of a 200,000-sq-ft casino.

Designers turned instead to more symbolic elements, identifying three recurring visual themes: a circular medallion-like form divided

Though sunk into its sloping site, the casino's planting does not yet evoke the original idea of entering through a berm. Design attention is focused on entrances.

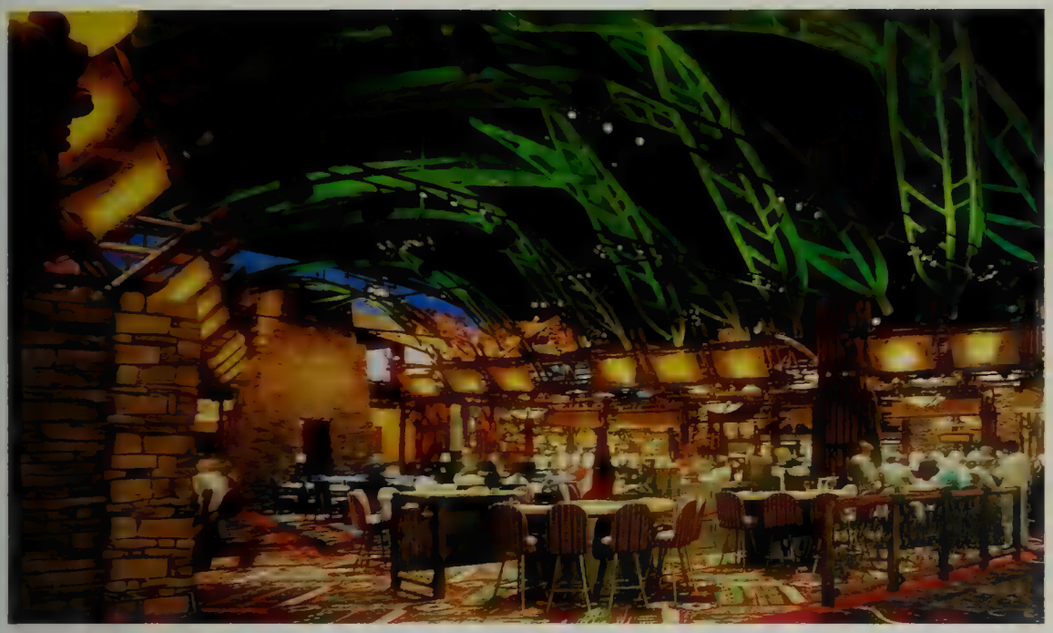




Though thematic elements are deployed using stage-set techniques, they help patrons orient themselves. Lashed totemic structures mark entrances and filter light from skylights (opposite bottom). Murals painted on fabric and cast-glass "leaves" on wood and fiberglass "trees" define seasonally named casinos. Trellises hover over table-gaming areas, while a curving drywall fascia and skin-like panels draw patrons to the central live-entertainment area (opposite top).









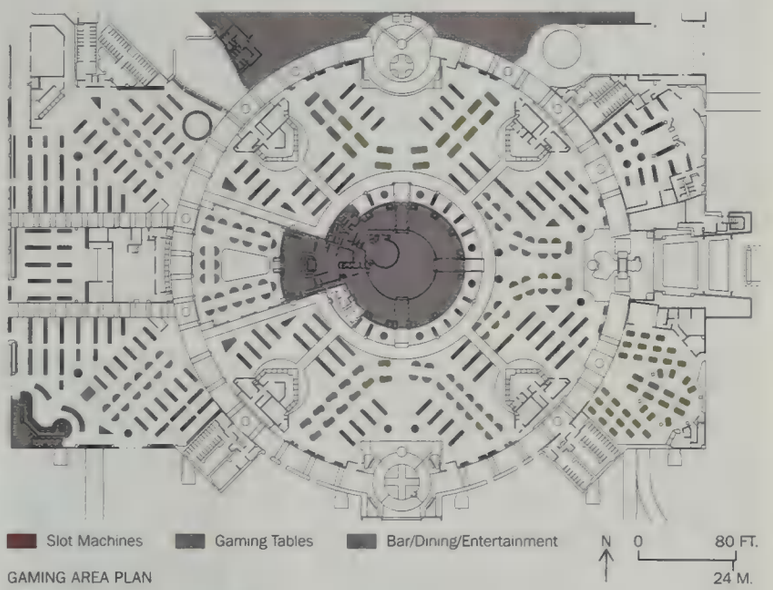
into quadrants, a linear "life trail," and a number of legends involving trees. Rockwell wove these elements into the plan, which consisted of a half-mile diameter circle with a path on its periphery and the resort functions attached to either side. Their elaborate presentation to Sun and the Mohegans—with materials boards and drawings that filled an entire van—was convincing, and in late 1995, Sun chose Rockwell Group for the job, but decided only to build the casino as a first phase.

13-month construction

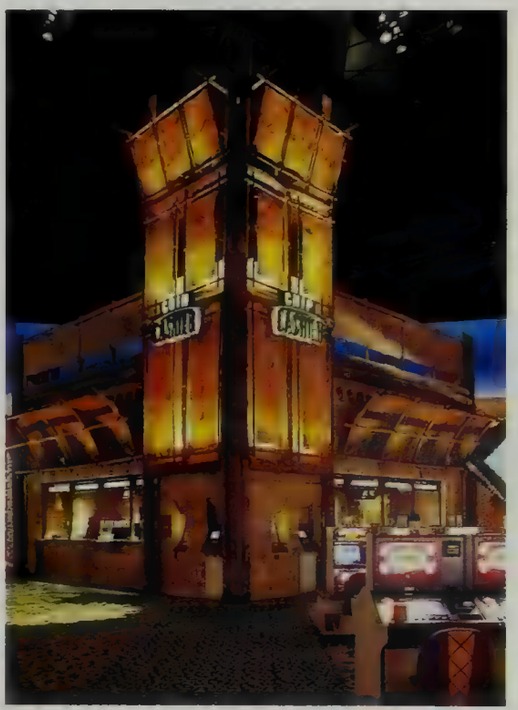
Sun was eager to have the casino up and running by the 1996 holiday season, so the firms had to move quickly. Sun and Brennan Beer Gorman had already decided to keep the existing L-shaped building for use as back-of-house space, and square off the L with new construction for the casino. This way, work could begin on the existing structure much sooner. Rockwell's office took on extra staff and created six teams to work on various aspects of the project simultaneously. Their assignment was to design "everything the public sees," according to the firm's director of design, Jay Valgora. Brennan Beer Gorman was responsible for the shell and for coordinating the project and overseeing its 18 consultants.

To adapt the plan to the smaller program, the architects retained the basic form of the competition entry but reduced it in scale, using the circle form to create a 350-ft diameter path to define the main casino space. As a way of breaking down the unusually large gaming area, the circle was divided into four quadrants that would function as separate casinos (although the boundaries between them are almost undetectable). They surround a tent-like central entertainment area. The designers also decided early on to break with convention and give the main space a 45-ft ceiling—15 ft is a gaming-industry standard. This decision, more than any other, shaped the distinctive features of the Mohegan Sun, permitting a variety of spatial experiences.

Although the firm worked with a gaming consultant who tutored in the functional requirements of slot machines and table games, Rockwell says that the gaming layout that was eventually used was theirs, one that is unusually figural and integrated into the design. The table games were laid out first, with low trellis-like structures suspended overhead (disguising lighting, security cameras, and other utilities) to preserve a sense of intimacy. The slots were arranged between them—"almost as poché," Valgora says. The resulting plan is also



GAMING AREA PLAN



Fronds wave over high-limit tables (top left). The Wolf Den is the central entertainment space (top right). Stone wall (opposite) is real; a stone-like sconce is fiberglass. A towerlike element (left) beckons players to cashiers.



To maintain the consistency of the theme within the casinos, a transitional bar was created (left) that leads patrons into a series of restaurants, each with a decor reflecting its cuisine. At the Mohegan Territory coffee shop (opposite top left), cracked tile rivulets interrupt custom-plaster mesas. Spaghetti-like bamboo-sail fabric filters light in the Bamboo Forest (Asian cuisine—opposite top right). The evocation of Venice (opposite bottom left) is carried from the stenciled stars to the table settings in Pompeii & Caesar. Custom-metal light fixtures, an entablature of antlers (scavenged, says Rockwell), and woven twig screens create atmosphere at the Longhorn Cafe.

1. *Winter casino*
2. *Spring casino*
3. *Summer casino*
4. *Autumn casino*
5. *Entertainment lounge*
6. *High-limit tables*
7. *High-limit slots*
8. *Poker room*
9. *Main cage*
10. *Bingo hall*
11. *Restaurant*
12. *Food court*
13. *Bus waiting room*
14. *"Back of house"*

unusual in that it does not attempt to dislocate the patron, as much casino design does; indeed, it is all about orientation, emphasizing the four cardinal directions. Further, skylights at each of the four entrances let in natural light, allowing patrons an awareness of real time (another no-no in conventional gaming wisdom).

Engineer Vince DeSimone, of DeSimone, Chaplin & Dobrin, devised a structural system based on a 60-ft grid, and came up with a floor of double precast concrete tees that would support rolling carts, or "mules," weighed down by quarters and dollar coins.

Meanwhile, Rockwell's team developed richly themed and decorated finishes for the largely undivided interiors, creating custom carpet, fabric, and wall-treatment patterns. Craft teams were imported to build stone partitions and Adirondack-style wood structures. Though the faux mixes with the real, natural materials prevail where they can be touched.

The $180-million casino opened—with a few odds and ends left undone—in October 1996, just 13 months after the beginning of design. How did the team get it done so fast? Valgora credits Sun's Sol Kerzner for pushing the job along with prompt approvals of design decisions, and he credits his own firm's enthusiasm for and dedication to the project. Rockwell's office had at least four people working on-site during construction; Brennan Beer Gorman had 10, turning out construction documents one step ahead of the contractor. Partner Hank Brennan says using precast floors and foundation walls, and reusing the existing building, helped avoid what would have been maddening delays during the unusually white winter of 1996.

The exterior is more revealing of the building's high-speed execution. Its blank masonry exterior and off-the-shelf parking structure look like afterthoughts, which in a way they are: Rockwell's original concept was to berm up the exterior so that patrons would "pass through the earth" to enter. As built, only faux-log structures at the four entrances hint at something special within.



CASINO PLAN

N 0 150 FT. 45 M.

Another world

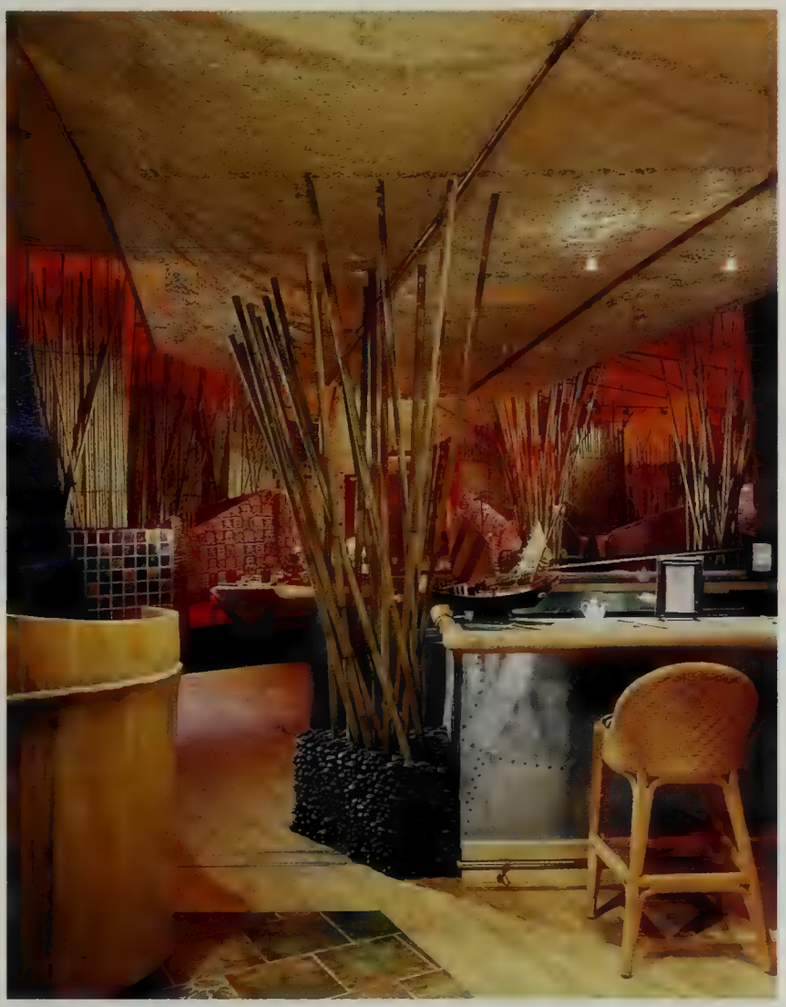
The trellises, theatrical lighting, and lashed-log structures draw the visitor to the high-ceilinged center of the space. The underside of the roof is exposed but painted black, creating a feeling of height that is suggested, rather than defined.

If you are uninterested in gambling and unusually diligent, you will find in the fabrics, wall-coverings, and carpet an iconography that rivals Gothic cathedrals. Along the circular path that surrounds the main casino space, 13 medallions are set into the floor (some terrazzo, some carpet). These depict the 13 moons of the Mohegan year, which have poetic names like "moon of the wading snow." Each entrance has murals and freestanding wood structures representing one of the four seasons, corresponding to the seasonal themes of the four casinos within, amplified by a series of "tree" column covers.

While Mohegan Sun relies heavily on illusion, it is not about replicating a specific place or kind of place. Rockwell's work is not as literal as that of Disney's Imagineers nor is it as abstract as the fantasies that Michael Graves devised for that company. At the Mohegan Sun, you're not necessarily supposed to be in an Adirondack great camp or a Mohegan settlement, although you might think about such places. Instead, Rockwell's approach acknowledges the artifice involved, but without labored irony, creating a stage set that people can actually enter. That feeling, more than anything else, is what the gambler gets in exchange for the likely sacrifice of their money. And judging by the crowds, a lot of people consider it a pretty good bargain. ■

Manufacturers' Sources
Plaster: *Visions In Plaster*
Lighting: *Sanchez Nitzberg; International Iron Works; Leucos*
Tile: *A Refined Selection; Serpen-tile*
Special themed elements: *Rock & Waterscape; MJM*
Chairs, barstools: *Shelby Williams*
Carpet: *Couristan*
Wood flooring: *Permagrain Products*







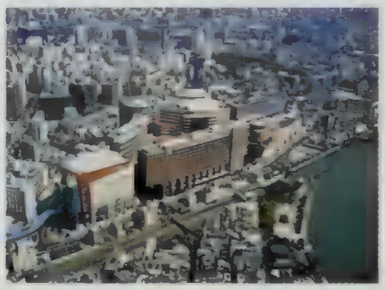


Canal City Hakata Fukuoka, Japan

JON JERDE TAKES HIS BRAND OF "EXPERIENTIAL ENVIRONMENTS" ABROAD TO CREATE THE LARGEST PRIVATELY DEVELOPED PROJECT IN JAPAN.

by Karen Stein

Project: *Canal City Hakata, Fukuoka, Japan*
Owners: *Fukuoka Jisho Co., Sumitomo Life Insurance Co., Fukuoka Japan Urban Design & Development Co.*
Developers: *Fukuoka Jisho Co., Fukuoka Japan Urban Design & Development Co., Organization for Promoting Urban Development*
Design Architect: *The Jerde Partnership International—Jon Jerde, FAIA, principal/designer; Eddie Wong, AIA, principal/management; Brian Honda and David Moreno, project designers; John Leggitt, tenant design; Duncan Paterson, Mike Hong, Ed Borrego, Ralf Konietzko, senior designers; Kiharu Tsuge, Charles Pigg, Wasa Sakamoto, Bob Cloud, John Simones, Tammy McKerrow, David Green, Hank Hockenberger, project team*
Architect of Record: *Fukuoka Japan Urban Design & Development Co.*
Landscape Architect: *EDAW, Inc.*
Environmental Merchandise Designer: *Clifford Selbert Design Collaborative*
Water Features Designer: *WET Design*
Lighting Designer: *Joe Kaplan Architectural Lighting*
General Contractors: *The Tenitaka Corp., Shimizu Corp. + Hazama Corp., [illegible] Corp.*



If there was any lingering doubt that the merging of entertainment and other commercial uses was a transnational trend, it is dispelled by the completion of Canal City Hakata, a 2.5-million sq ft, $1.4-billion megacomplex that fills nine acres of riverfront property in Fukuoka, Japan.

Canal City Hakata was designed by the Jerde Partnership International (JPI), the firm that invented the retail-office-entertainment behemoth that has become standard fare for revitalizing urban centers and developing suburban greenfield sites in the last decade. Or, at least, JPI *re*-invented the type in 1985, with the completion of Horton Plaza in downtown San Diego, a $40-million shopping district described variously as a "pastel-swathed, stucco-and-tile catalog of archetypal urban components and stylistic allusions" or "Post-modernism gone amok" [RECORD, March 1986, pages 128-135]. Jon Jerde, FAIA, himself described it as savior to the central city's previously desolate business district.

Success at home

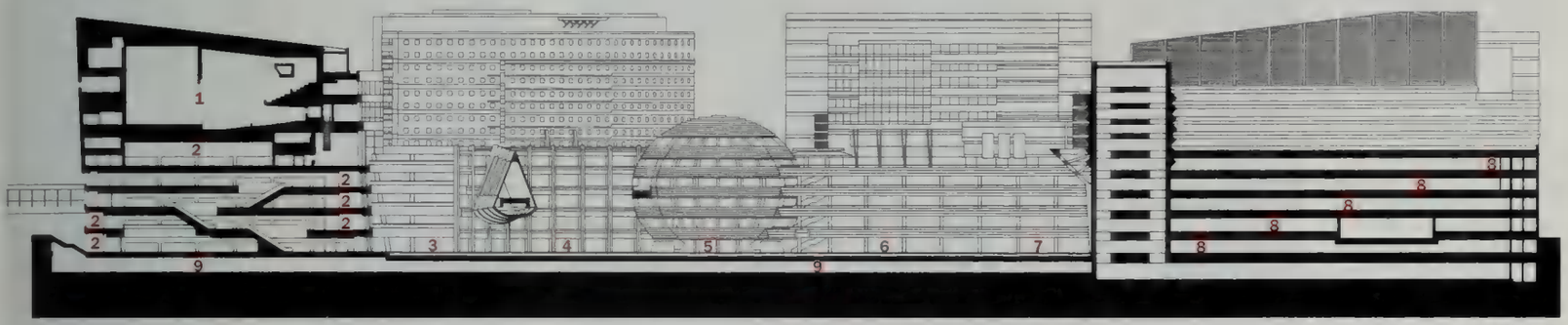
"The regional shopping center is the last vestige of the communal scene in America," says Jerde of his attempt to create a sense of place for a failing community and, not incidentally, a source of profit for his clients. In his view, he does not just design shopping centers; he also, along with colleagues at his 140-person firm, practices a new architectural discipline, which JPI calls "experiential design and place-making."

The impressive 25 million annual visitors to San Diego's Horton Plaza (nearly three times initial predictions) made Jerde, in his words, America's "fair-haired boy of retail," attracting clients and inspiring projects across the United States. It even led to the country's largest theme park-like retail outlet, the $625-million Mall of America, located outside of Minneapolis in Bloomington, Minneapolis, in which JPI also played a role. It was only a matter of time before Jerde started exporting his expertise in retail design abroad.

1. *Naka River*
2. *Nakasu district*
3. *Grand hotel*
4. *Business hotel*
5. *Performing arts center*
6. *Office building*
7. *Cineplex*
8. *Parking (located above department store)*
9. *Pedestrian bridge (leading to metro station)*



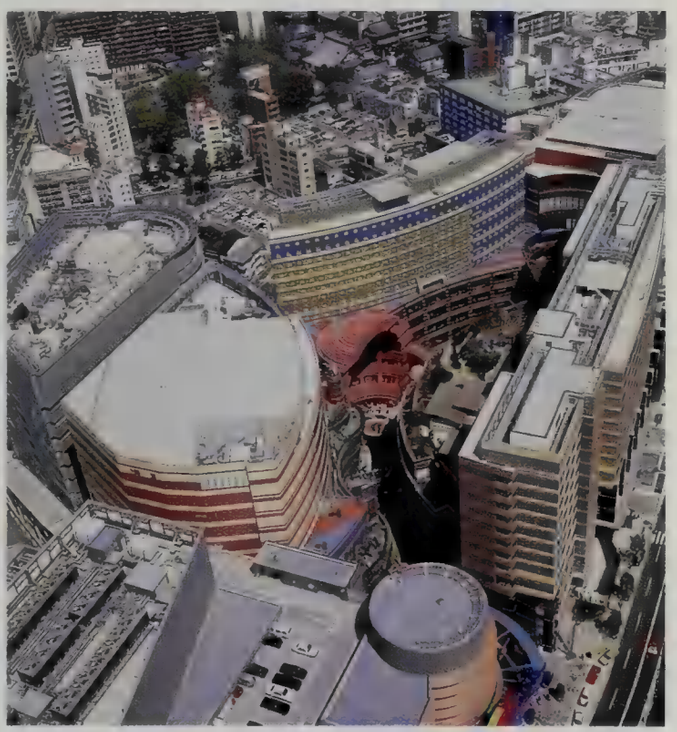
1. *Theater*
2. *Retail*
3. *Star Court*
4. *Moon Walk*
5. *Sun Plaza*
6. *Earth Walk*
7. *Sea Life Playground*
8. *Department store*
9. *Parking*



NORTH-SOUTH SECTION

164 FT.
50 M.

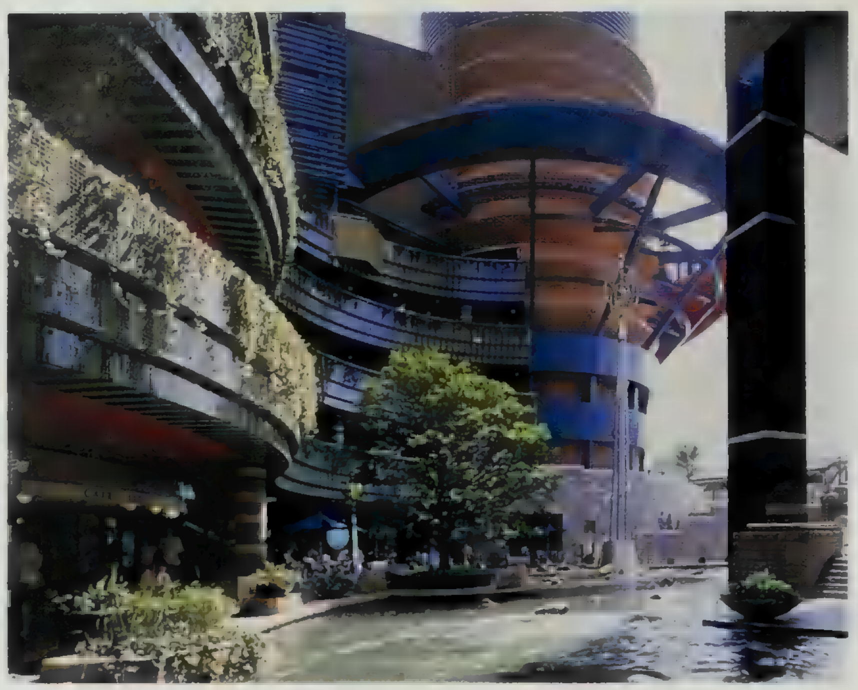


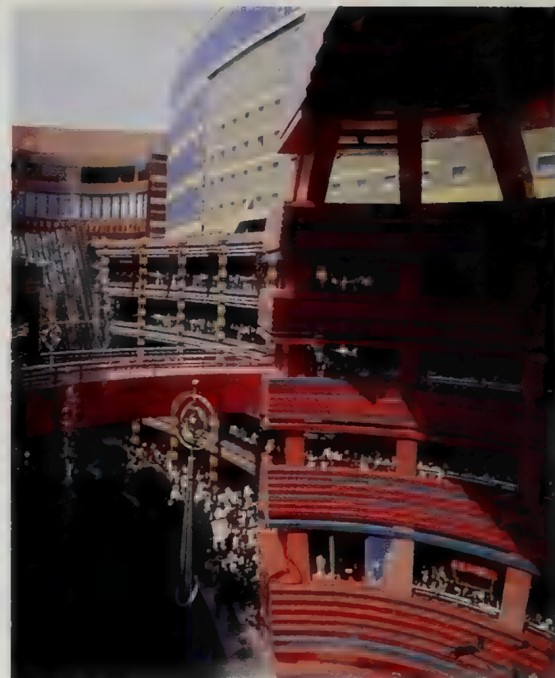




An aerial view of Canal City Hakata shows the nine-acre development alongside Fukuoka's Naka River (above). Buildings, including the business hotel, are clad in contrasting stripes to resemble a family of zebras, according to Jon Jerde (right). A view from the Star Court toward the city of Fukuoka (left).

Identifying elements of the Jerde design include a tower and the vine-covered "wiggle wall" (near right), and the hollowed sphere of the red Sun Plaza (far right). A performance at the Sun Plaza amphitheater draws crowds; some 20 million people are expected to visit in the first year. Bridges connect to shops and hotels (below).





Taking it on the road

His first completed project outside American borders is Canal City Hakata. Thanks to a small but deep-pocketed group of enlightened developers, the bustling port city of Fukuoka in southern Japan already has had its share of international architectural star turns since the late 1980s, including Aldo Rossi's monumental Il Palazzo Hotel [Record, May 1990, pages 70-75].

JPI, however, was engaged on a much larger scale than Rossi or others like Rem Koolhaas, Michael Graves, and Steven Holl who have all completed projects in Fukuoka. JPI was to masterplan the largest privately-developed project in Japan's history. Work on the complex began in 1988 and the project survived several starts and seemingly complete stops—influenced by dramatic fluctuations in the Japanese economy—to open to the public some eight years later, on April 20, 1996.

The initial design concept, developed early in the process, also [illegible] JPI principal and one of Canal City Hakata's project designers [illegible] as [illegible] natural patterns, effects, mysteries, and life forms affecting our world."

Making it unique to Fukuoka

Toward that end, the architectural team conceived a masterplan around the central natural feature of the site, the Naka River, "diverting" its path so it would bisect the site and provide for a 700-ft long pedestrian promenade along its banks. (Ultimately, changing the course of the ocean-fed river proved too complicated and too costly, so a separate canal was made.)

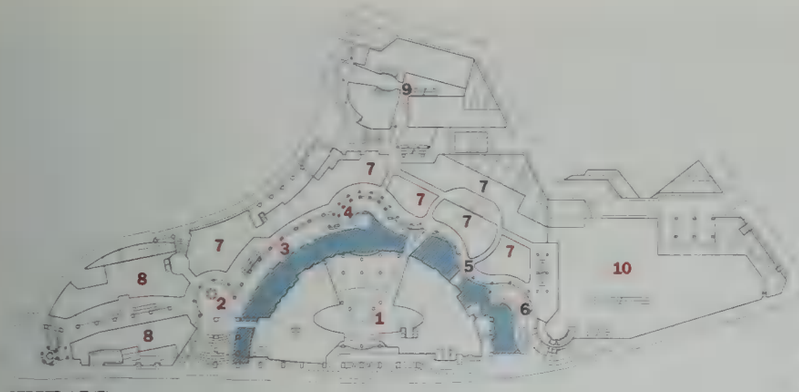
The meandering arc of water is the armature of the design—the project's proverbial main street—connecting the five themed outdoor environments of the stars, moon, sun, earth, and sea, which are symbolically rendered in contrasting geometrical forms. Four destinations anchor the concept: the Fukuoka City Theater, Daiei's Mega Vandle department store, a Grand Hyatt Hotel, and the Canal City Business Center.

But JPI's simple environmental theme had to withstand major challenges over the years. The ordering and coherence of the spaces was threatened as prospective tenants made demands as conditions of signing on—then dropped out for a variety of reasons. The mix of retail, business, hotel, and entertainment components of the development program seemed perpetually in flux, explains JPI principal and one of Canal City Hakata project designers Brian Honda. Rather than specific buildings for specific tenants, during the first few years of the design process, "We were designing 'place holders.' It was about spirit rather than character," recalls Honda of the process.

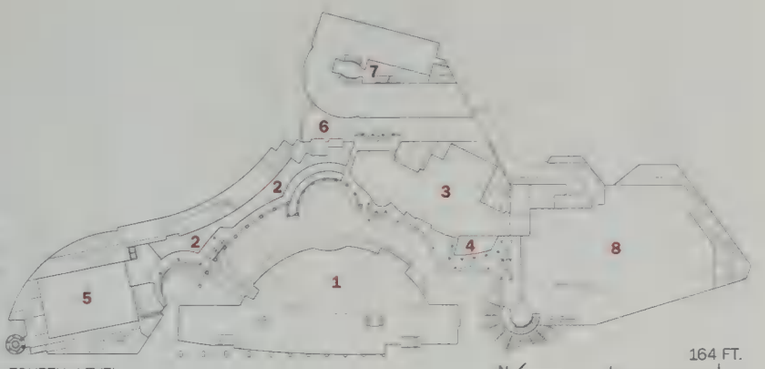


Communal design process

Design development was also influenced by JPI's method of working, called "co-creativity." According to this premise, the Venice, Calif.-based



STREET LEVEL



FOURTH LEVEL

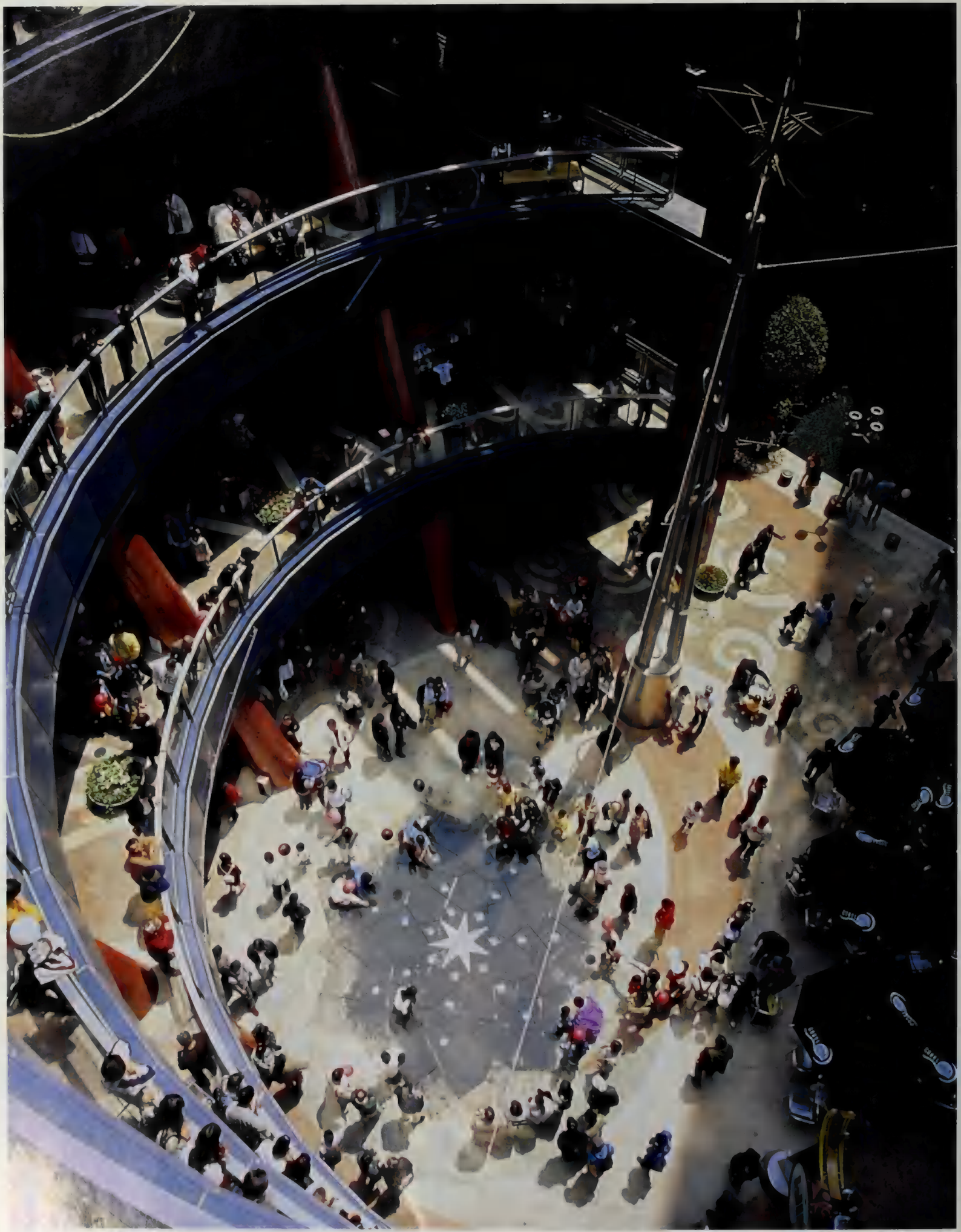
N ←

164 FT.
50 M.

1. *Lobby*
2. *Star Court*
3. *Moon Walk*
4. *Sun Plaza*
5. *Earth Walk*
6. *Sea Life Playground*
7. *Retail*
8. *Restaurant*
9. *Showroom*
10. *Department store*

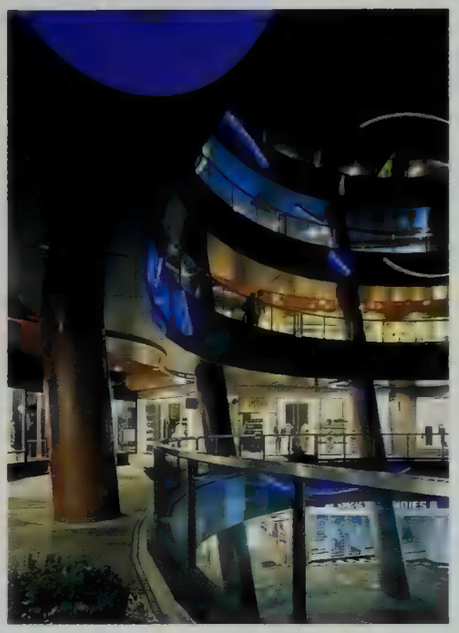
1. *Hotel banquet functions*
2. *Retail*
3. *Amusement center*
4. *Cinema*
5. *Restaurant*
6. *Office atrium*
7. *Showroom*
8. *Department store*





Signage, banners, and sculpture are by the Clifford Selbert Design Collaborative. Restaurants overlook the Star Court (opposite). Joe Kaplan Architectural Lighting did neon curves to echo the canal's arc (near right). Interior spaces are brightly colored to maintain excitement levels, says Jerde (below).





JPI team members worked closely with outside designers and consultants—in this case landscape architects EDAW of Irvine, Calif.; environmental-merchandise designer Clifford Selbert Design Collaborative of Santa Monica; and water features designer WET Design of Universal City— as if all were participants in a seamless, virtual studio. The result is that all the elements—from signage to site sculpture to lighting—reinforce the central image.

A herd of buildings

In order to distinguish the various buildings within the complex while maintaining a sense of unity, JPI envisioned them as members of a family of zebras, each with slightly different stripes. The zebra-herd metaphor was also meant to echo the overall theme of the master-plan: nature. "The architecture makes a reference to time and nature," writes Moreno in Hakata Canal City's concept statement. The building bases are stone, and their vertical faces rise from a canal, a reference to how a river over centuries erodes the land, forming a canyon.

"In the process, layers of varying stone are exposed, thus the design of the horizontal banding. Upper building layers become more refined, lighter and modern. Japan, because of its long appreciation and respect for nature, its ancient history and far-reaching image of the future, is a prime location for this idea. Fukuoka specifically, with its history as an original gateway to civilization and its desire to become one of the world's great modern cities, would be an ideal place for this Biosphere of man's natural world."

While the theme of nature was intended to give some specificity to the project, to relate it to the existing environment and the specific landscape features of Fukuoka, it also draws on universal themes of light, space, scale, and color—issues that Jerde is now exporting throughout Asia in new projects that he and his colleagues are currently developing for sites in Tokyo, Jakarta, Taipei, Manila, Shanghai, Beijing, and Seoul.

In Fukuoka, JPI discovered it knew more about retailing than its client consortium, providing the opportunity for a larger role for the firm. Says Honda: "We expanded our services. We could provide things beyond design, like marketing, leasing strategies, promotion."

Jerde's Japanese clients came to rely on him as a guru of the retail industry, and Jerde is happy to forecast the future. His prognosis: "This [Canal City Hakata] is visionary stuff. Seventy-five years from now this is what Fifth Avenue [in New York City] will be like." ■

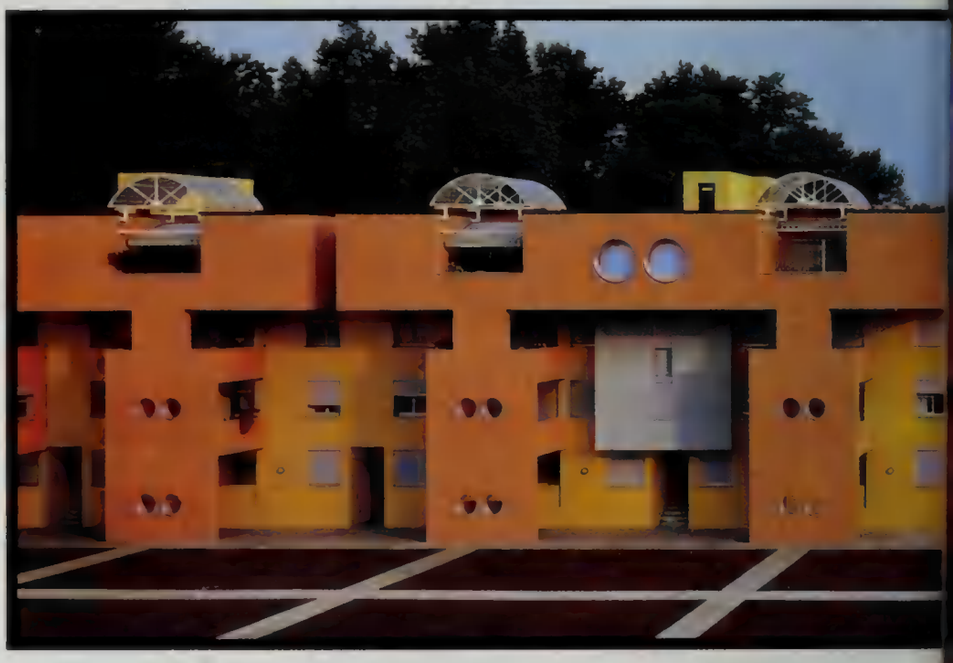
Manufacturers' Sources

Open mall area reinforced concrete with tiles: *Toto*
Mall area fire-control steel doors with security grilles: *Sanwa shutter*
Mall area lockets, hinges, pulls: *Miwa Lock*
Mall area aluminum chairs: *Nitiesu*
Mall area aluminum tables: *Yamazaki Sangyo*
Mall area exterior lighting pole: *Koizumi*
Business center concrete: *Toto*
Business center sheet glass: *Tanatyoh*
Business center aluminum, steel: *Okuju*



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s e e i n g



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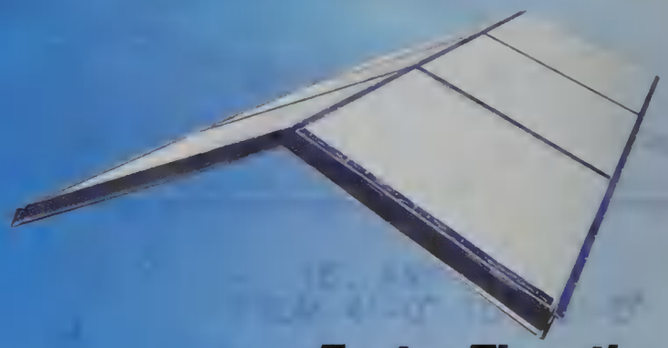


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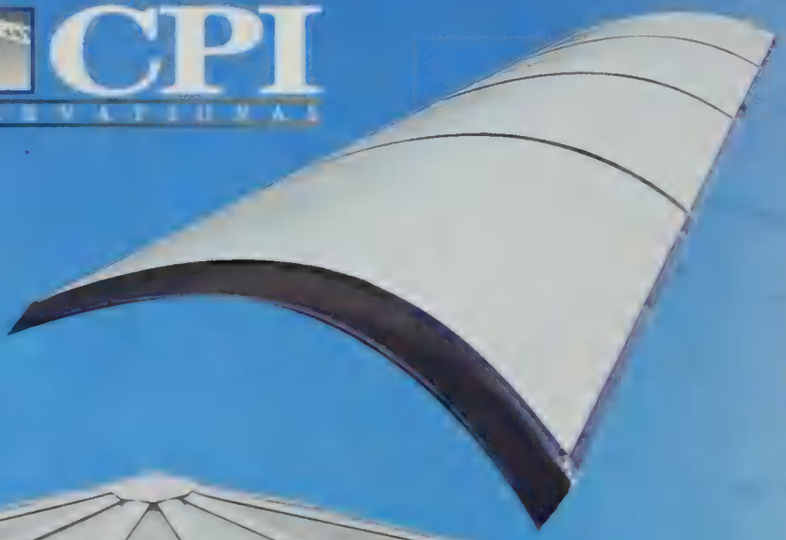
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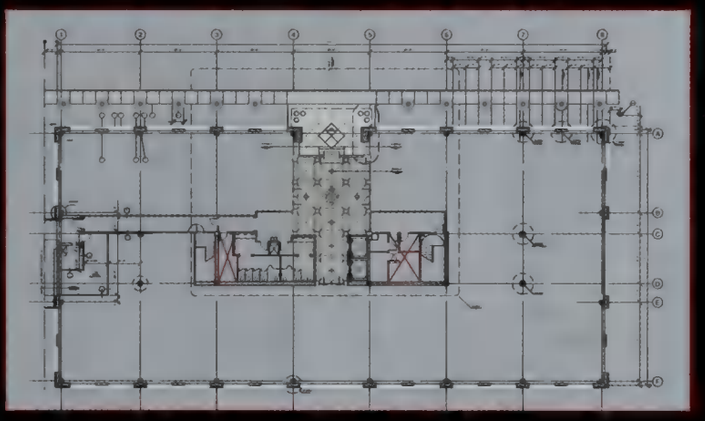
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- Most Cost Effective
- Easiest to Use
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- Best Elevations
- Best Sections

MiniCad also placed a close third in the Overall Winner category (garnering 21% of the audience vote compared to Arris' 25% and ArchiCad's 24%), beating out AutoArchitect, Microstation Triforma, AllPlan, Architrion, and DataCAD. Even more impressive: MiniCad was the only software program running on both a Macintosh and a Windows machine during the event.

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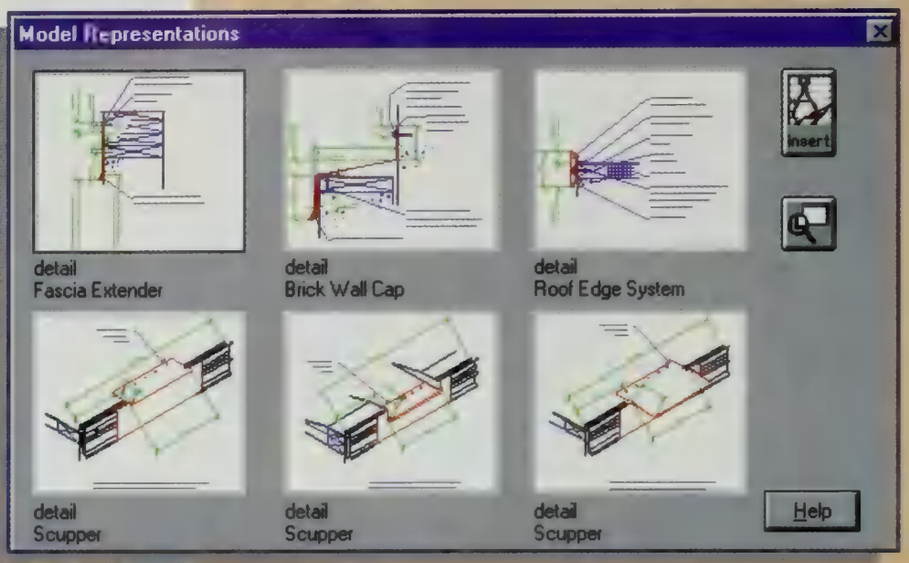
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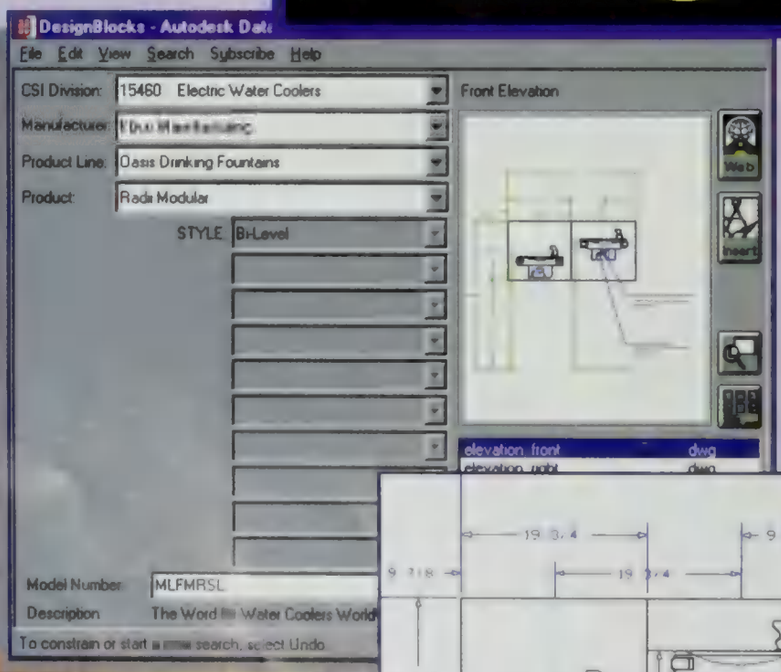


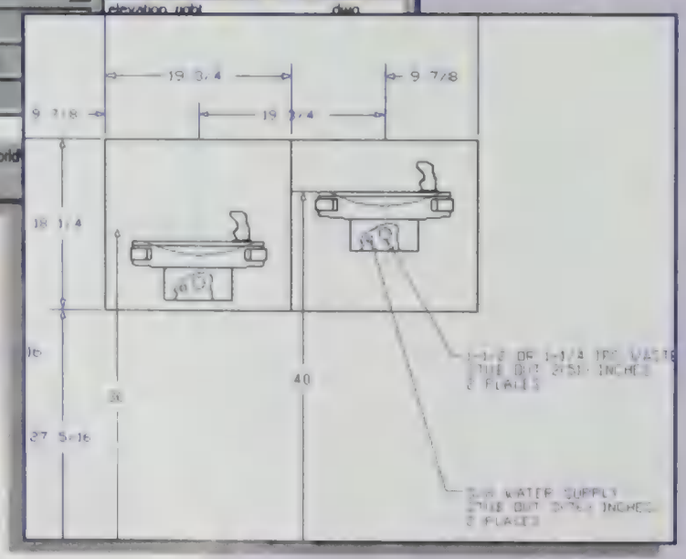
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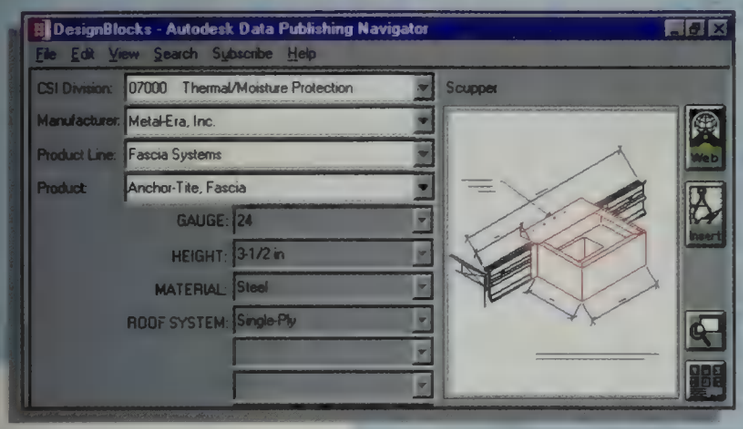
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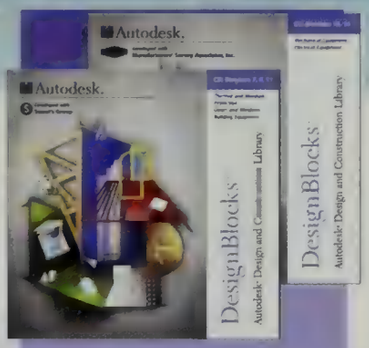
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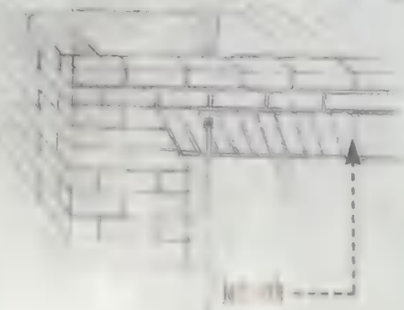
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CIRCLE 169 ON INQUIRY CARD

Notes from a Consultant: Making Exterior Stone Succeed

THE SECRETS LIE IN ASKING THE RIGHT QUESTIONS, GETTING COST ESTIMATES, VISITING QUARRIES AND FABRICATORS, AND TAKING NOTHING FOR GRANTED.

by Malcolm Swenson

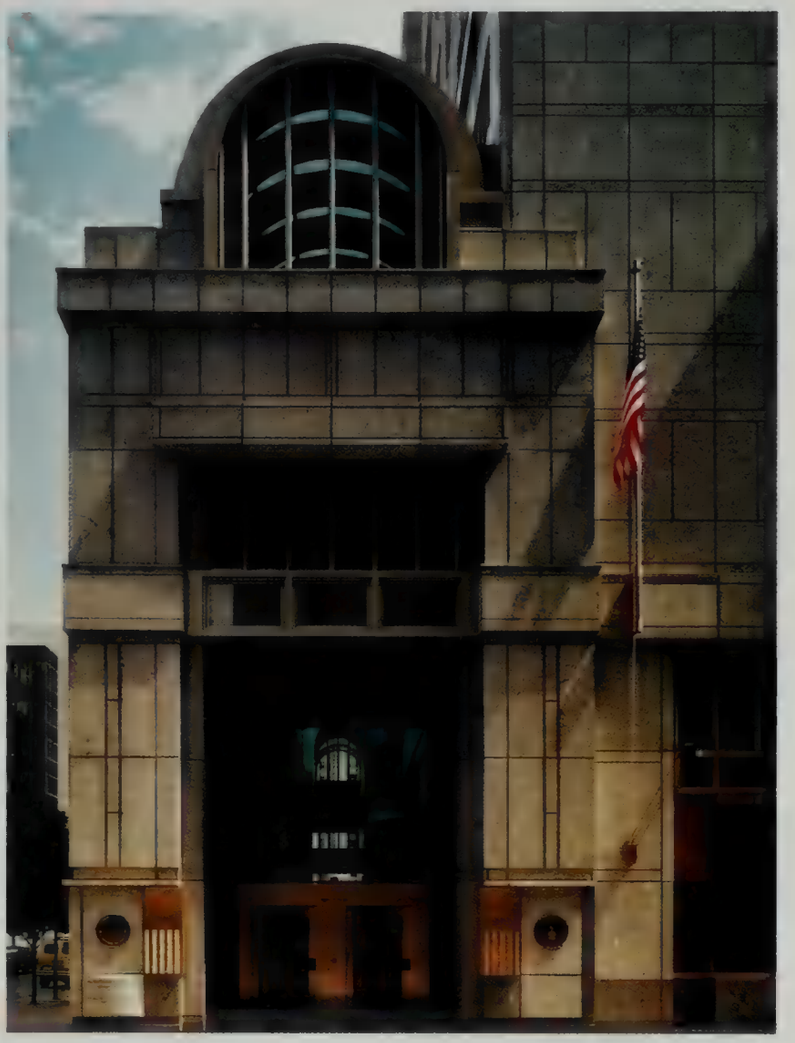
Natural stone can be a wonderful material for buildings. It offers the architect a wide palette of colors and finishes; many kinds are extremely durable, and it can be cut or carved into an infinite variety of shapes. Stone can also be the source of budget and performance woes—even finding a source of the stone that is desired can cause problems. The purpose of this article is to help architects who wish to use stone in their buildings and to suggest some ways of dealing with problems that arise.

The essential problem with the use of stone is that there is not enough knowledge about it throughout the design and construction industry, even within the stone industry itself. All of these professionals are expected—or assumed—to have far greater knowledge than is reasonable. The variety of stone and its many applications are so great that in working with stone over my lifetime it has seemed that when one question was answered, there was already another waiting to be asked. It is because of this dearth of knowledge where much expertise might be assumed that architects should be very cautious, questioning and questioning again any suggestions about detailing, installation, or part of working with which stone they may be uncomfortable. In an environment where great quantities of material are being bought or sold, people may lay claim to more knowledge than they really have.

Construction managers (CMs) are often put in this role. Of course, there are many competent people in construction management. But it is the construction management process itself, particularly in its reliance on vendors for information, that does not provide CMs with enough specific knowledge to deal with every technical problem that arises. For example, recently our firm was retained to consult on the replacement of the granite plaza in front of an architecturally significant building in a northern climate. The granite pavers had been supplied in 3/4-in. thickness, on the strong recommendation of the CM and the vendor, not the architect. Not surprisingly, the plaza's too-thin pavers cracked and had to be replaced by 1 1/2-in. granite.

On another job, the CM recommended panelized stone for the exterior of a building because he felt it was more economical than hand-setting. However, the joint size preferred by the architect could not be achieved with a panelized system. Given the building's low height, and the use of uniformly sized stone, we believed that hand-setting would be less expensive than panelization. After analyzing the cost of each installation method, the hand-set approach was used, and the fine jointing achieved. But our analysis of the problem probably wasn't as important as the architect's questioning of the CM's recommendation. The architect probably could have reached the same conclusion that we did by obtaining cost information from a contractor who specialized in hand-setting.

Malcolm Swenson is president of Swenson Stone Consultants, of Hanover, N.H. He managed stone operations for the Turner Corporation in several countries before establishing his stone consulting business for architects and building owners in 1987.



The smallest mismatch of the grain or color in stone is noticeable, so dry layouts at the fabricators' are crucial. Above, Federal Office Building, New York City, HOK Architects.

Stone setters provide good information on installation. However, most rely on their material suppliers for quarry and processing information, and don't have enough knowledge to avoid quarry problems. Setters make money by managing their jobsites well. This does not leave much time for quarry visits.

In one case, which occurred when our firm was still actively involved in the stone-setting business, ours was one of two being interviewed for the stone-work on a major high-rise. The uniformity of the granite banding was vital to the building design. The owner commented



An aerial view of Kohn Pedersen Fox's Goldman Sachs Building in London (left) and of reestablished Peterborough Square (below) shows how well stone allows new buildings to fit into an older urban context.





Stone was also a natural choice for establishing an appropriate context at street level for Goldman Sachs, which abuts the London Daily Telegraph building on Fleet Street (above).

that both firms gave identical answers to all his questions except one. Our competitor said that the granite would vary in color from panel to panel. We promised to provide granite that was absolutely uniform in color. We could do so because we had visited the quarry and arranged to obtain all the project's rough blocks from an enormous but uniformly colored boulder. Our competitor's blocks would come from several different quarries, with different color tones, and would be combined and mixed.

Realizing design goals in stone

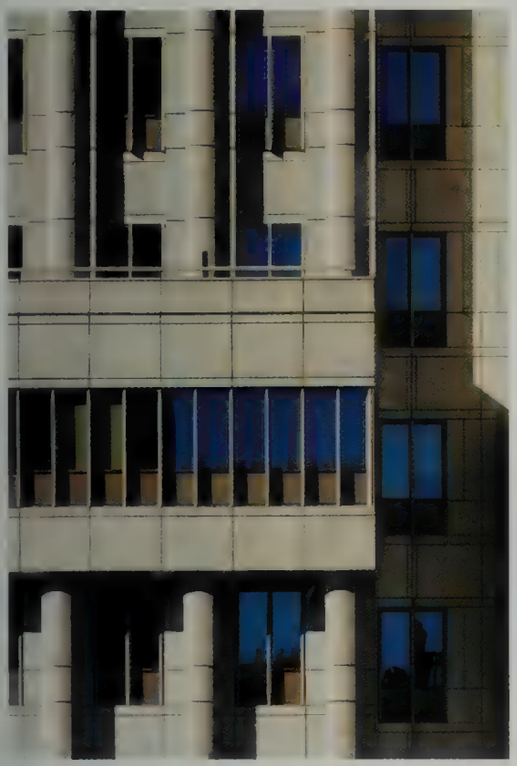
The process begins with sourcing. Even in a large market, like New York City, realistically only a small percentage of the stones from around the world are available. There are a number of sources for information on what is available, however, including local stone company representatives, and various trade associations such as the Marble Institute of America, the Indiana Limestone Institute, and the Building Stone Institute. During the sourcing process, the owner or construction manager may object to a particular stone on the basis of its presumed cost. Be prepared with your own cost information from a consultant, supplier, or installer. In our experience, stone is rarely as expensive as it is initially perceived to be by [illegible].

From initial budgeting on, a stone design can benefit from [illegible] between the potential stone fabricators and the architect. In [illegible] the architect can obtain separate supply pricing, even if the final supply-and-install contract is given to a contractor. This also brings the architect in direct contact with knowledgeable people who will be largely responsible for what the building will look like. When the fabricator understands what the architect wants to achieve, the fabricator can work toward that result from an extensive base of experience and knowledge. And in working directly with the fabricator, the architect can ensure that a dry layout of the stone panels at the factory is included in the pricing. Such dry layouts cost little and are absolutely essential when blending certain types of stone. They also speed installation, and reduce the possibility that there will be rejections at the site.

Color and finish

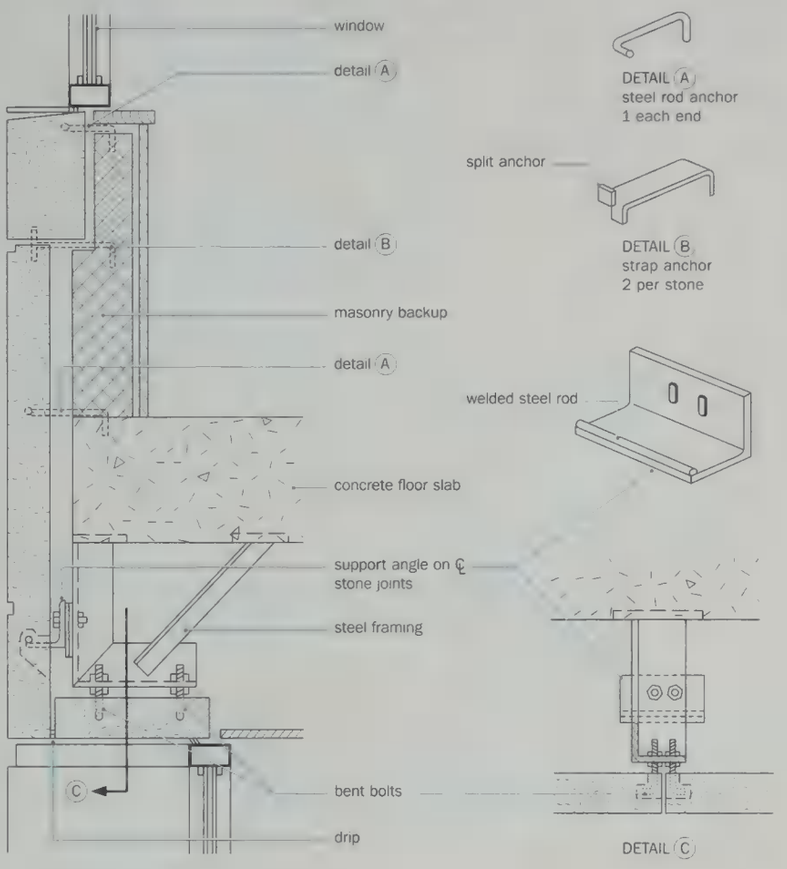
Architects should also visit quarries to view the actual appearance of the stone currently being quarried, and to verify whether the quarry can produce enough stone to complete the job. Visiting existing installations will help the architect evaluate the characteristics of the stone with regard to its reaction to moisture and staining. To get the right stone, the architect should name the quarry and its location in the specifications, as many varieties of stone are offered under common trade names.

New types of stone are continually being introduced, which makes testing for weathering and potential performance problems important. For example, in the U.S., the introduction of foreign limestones has broadened architects' choices, but while the properties of domestic lime-





Countless variations on details such as those at the far right allow stone veneer to be anchored in almost any position. Federal Office Building, New York, City (above and right), HOK Architects.



STONE HEAD AND SILL SECTION

stones are well known, some foreign varieties are stronger and some weaker. A good way begin to understand what you're dealing with is to compare specification information about their physical properties.

Proceeding with design, shop drawings, and approvals

As design proceeds, it is important to obtain information on detailing from consultants, the stone industry, or both. The stone-veneer detail shown above is fairly typical, although there are countless variations. Where stone veneer is concerned, it must be both supported and restrained. There are several design manuals available, and the Indiana Limestone Institute's is probably the best single one. The use of relatively thin veneer has been common for years, and there is nothing inherently wrong with its use. However, if price-pressure plays an inordinate role in determining the thickness of the stone and this results in veneer that is too thin, problems will eventually result.

After the selection of the stone, it is important that the shop drawing process progress quickly—no final fabrication can begin until shop drawings are approved. On some projects, we have even recommended that shop drawings begin before the awarding of the stone contract. It is also critical that prior to the beginning of installation that the proposed sealants are tested and approved for compatibility with the specific stone being used.

During the fabrication and installation process, it is important that specification requirements regarding storage, handling, and shipping are observed in order to avoid staining and damage to the stone. A standard specification like the one published by the National Building Granite Quarries Association is useful.

Although working with stone can seem mysterious and complex compared to other building materials, the results can be extraordinarily beautiful. It is most important that architects be aware of the pitfalls of designing with this material, and especially the challenges that are presented when stone is being procured through the traditional construction management process. Architects should be ready to question decisions and suggestions that might compromise their designs, and to take a proactive stance, visiting the quarry, fabricators, and setters, so that these tradespeople understand the architect's design intent. ■

For further information:

- *The Building Stone Institute, P.O. Box 5047, White Plains, N. Y., 10602-5047. 914/232-5725*
- *Indiana Limestone Institute of America, Stone City Bank Building No. 400, Bedford, Ind. 47421. 812/275-4426*
- *Marble Institute of America, 33505 State Street, Farmington, Mich. 48335. 313/476-5558*
- *The National Building Granite Quarries Association, P.O. Box 482, Barre, Vt. 05641. 800/557-2848*

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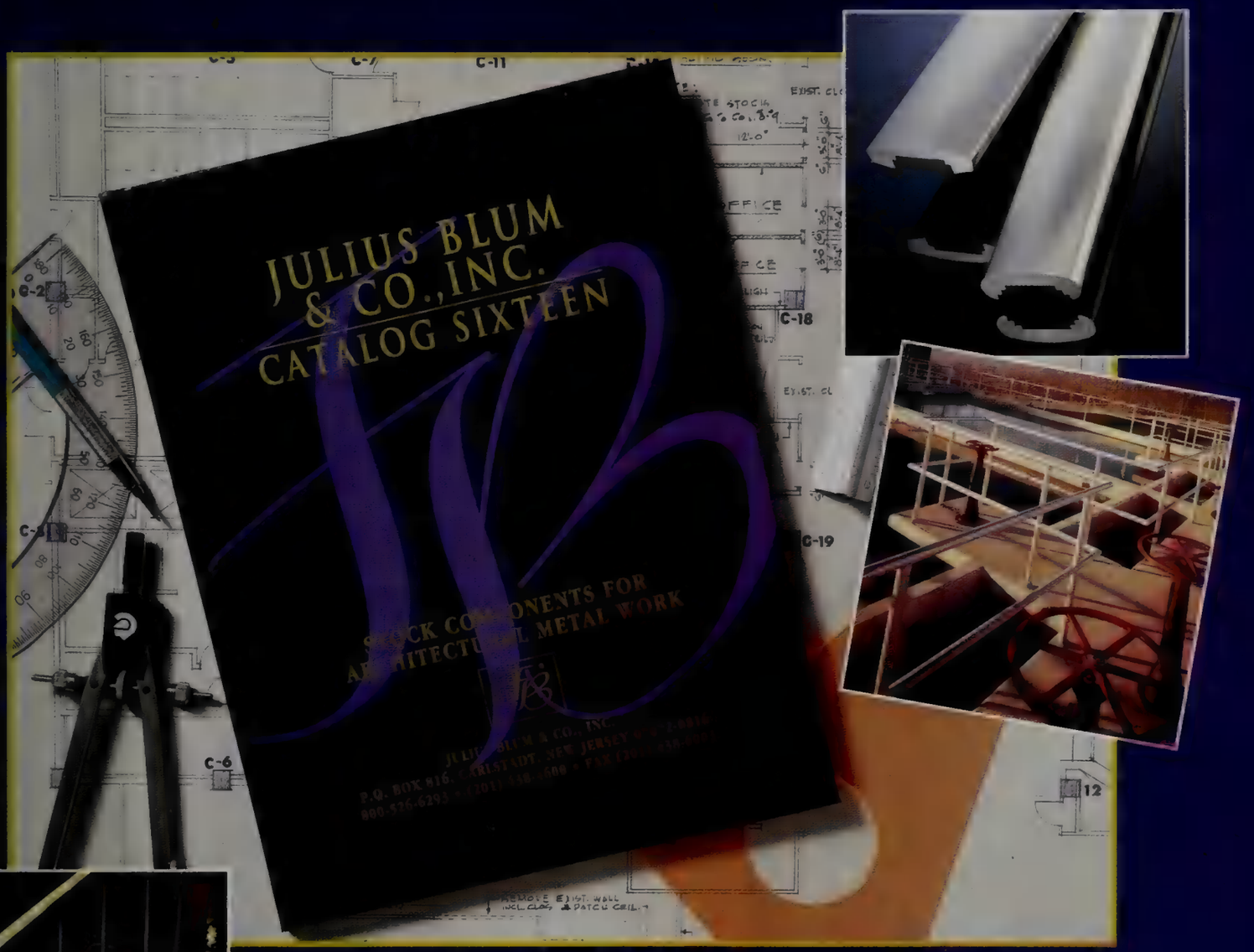
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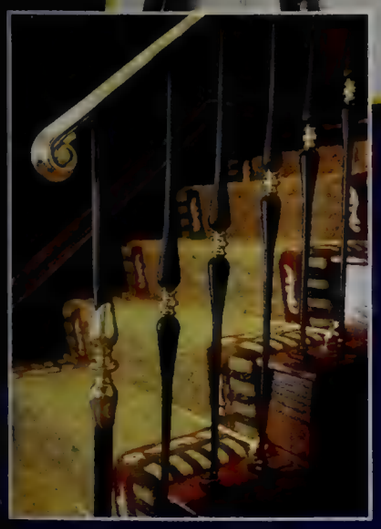
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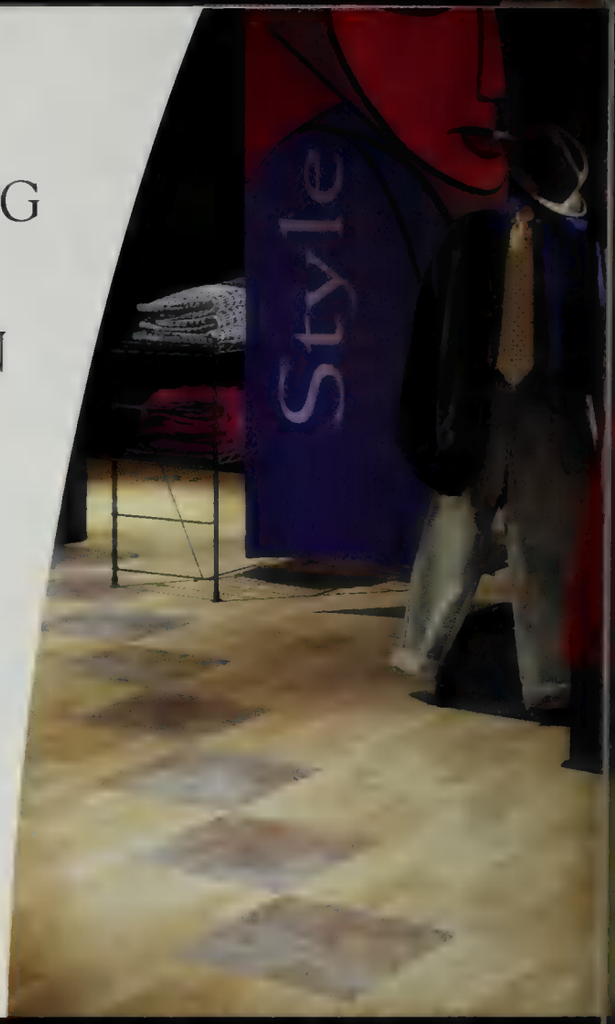
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KITCHEN & BATH PORTFOLIO

This is RECORD's third annual Kitchen and Bath Portfolio: a snapshot of the design sensibility architects bring to these domestic spaces. Many of the projects shown on the following pages have been selected from recent residential work submitted as part of our 40-year-old RECORD HOUSES award program. Once editors had selected those projects to be published in the April issue as the RECORD HOUSES of 1997, the remaining entries were reviewed specifically for the caliber of the design of their kitchens and baths. Other work was submitted independently. All of the spaces in this portfolio have been done in the context of the design and construction (or renovation) of an entire home, and incorporate the material palette and spatial orientation of the building's architecture. RECORD editors feel that the products and materials chosen by architects set the trends in the home-building industry: the flooring, counter tops, fixtures, and lighting styles you see here will be available in builder homes approximately three years from now. One of these trend-setting, emerging residential materials is concrete. This basic structural product is being used by architects as decorative flooring, cast as cabinet tops to create a rugged work surface, and even made into radiantly heated bathtubs.
—Joan F. Blatterman, New Products Editor

CLEAN AND SPARE ROOMS ABOVE THE BIG WOOD RIVER



The owners of this California residence, a new full-time home for a family with four children, wanted a kitchen that could function farmhouse style. A large space centered on a commodious table where children could do homework, or six people enjoy a family meal without the decorative trappings that traditionally signal "country."

What Joan Diengott of Chase/Diengott came up with was a spare but welcoming central room, focused on a custom eat/work table made of medium-density fiberboard with steel inserts. The table, as well as the integrally colored plaster walls and concrete floors, work with a palette inspired by the native woodlands in early spring: the red of bare dogwood branches and the soft yellows and greens of the surrounding aspens. The pendant light hangs from a stained-wood beam that bisects a skylight above it.

Surfaces such as the stainless-steel counters around the custom sink are utilitarian and easily cleaned. Floors throughout the first floor are scored concrete, acid-treated and colored. Cabinets are curly maple finished with a clear urethane; pulls and knobs were designed by the architect and fabricated from cut-and-ground aluminum scrap. Hardware is placed "like musical notes" over the cabinet fronts. High cleresories let light into the essentially windowless space, and capture views of high bluffs across the river to the west.

Walls in both kitchen and bath are finished in cementitious plaster to mimic the effect of stripped formwork. The bathtub is concrete, radiantly heated (as are the floors). Set at the base of the drywall, an aluminum plate visually lifts the partition walls. Hospital cubicle-cloth track and beaded chain hold the shower curtain.





Architect: *Chase/Diengott, Portola Valley, Calif.; Joan Diengott, project architect; Laura Chase and Leandro Sensibile, project team*
Sources: *Tony Olea Plastering (integrally colored and cement plaster); Paul Bates (custom cabinet hardware); Lockinvar Boilers and Technmark Controls (radiant heat system); Dal-Tile (glass tiles); Kroin (towel loops and faucets); Bega (bath light); Hain (cedar tilt/turn windows); Kitchen-Aid (refrigerator); Omnia (lever-handle hardware); Murano Due (dining area pendant and sconces); Lutron (Graphic Eye lighting controls)*

NEW CALIFORNIA HOME RISES FROM THE ASHES

Replacing a Tudor home destroyed in the 1991 Oakland fire with a new, three-story residence more responsive to the needs of a young family in the 1990s, Mark Horton created this wide-open kitchen. Instead of windows of clear glass that would let the kitchen/family room space get much too hot at its new, south-facing orientation, he filled the room with daylight diffused through the frosted-glass fronts of cabinets that back up to an exterior wall of light-transmitting, insulated fiberglass panels. At night, this translucent wall is illuminated by linear incandescent signlighting fixtures aimed at the panels. Narrow, counter-height windows permit a low-glare view out. The sandblasted, ground-glass cabinet fronts are treated to resist finger marks and smudging.

Light, cost-effective clear maple was used for the cabinets, finished in a flat urethane. Flooring is also maple. Carrara marble counter tops provide an interesting pattern without clashing with the extensive wood used in the kitchen. The spiral stairs beyond the family-room area lead up to children's bedrooms and down to an indoor play area.

A pre-fabricated fireplace was set into a custom-fabricated stainless-steel surround; the metallic cabinet fronts are a brushed-aluminum laminate. Some "doors" on the fireplace wall conceal storage and a television set; others are dummies set in front of the flue. The subtle curve of the stainless-steel mantel mimics the curve of the new house's barrel-vaulted roof. And unlike the destroyed Tudor it replaces, the new house in the Berkeley hills has a metal roof and cement-board siding.

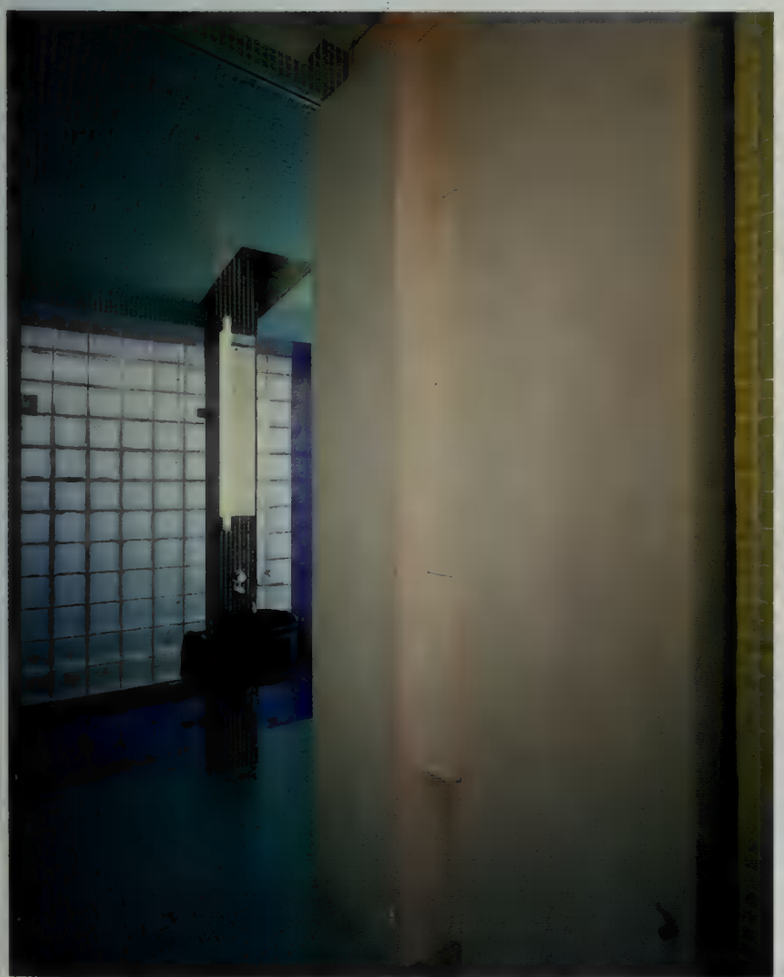
Architect: *Mark Horton Architecture, San Francisco, Calif.*

Sources: *Abet Lamanati (brushed-aluminum laminate); Standard Sheet Metal (stainless-steel fireplace surround); Kalwall Corp. (translucent, insulated wall panels); Marble Unlimited (Statuary White counters); Wolf Range (cooktop); Franke (bar sink); Grohe (bar faucet); Elkay Mfg. Co. (kitchen sink and faucets); Marrone Brothers Cabinets (cabinetry); Best (ventilation hood); Benjamin Moore (paints); Leucos (Golf pendants); Baldwin (knobs); Sugatsune (glass-door hinges); Milgard (Etchmatte glass cabinet doors); Temko (firebox); Lightolier (Cross Blade fluorescent downlights); Prescolite (MR16s); Leland Design Group (Marquette counter seating)*









COOL BATH UPLIFTS A DEPRESSION-ERA TOWNHOUSE

A partial remodel of a small builder house from 1930s Chicago placed an expanded master bathroom off the reconfigured—but still long and narrow—entry hall. Both to gain floor space and to shield the bath from direct view from the front door, a section of the new room pushes out into the hallway, which angles around to arrive at a new, light-transmitting sliding door of textured fiberglass (see plan).

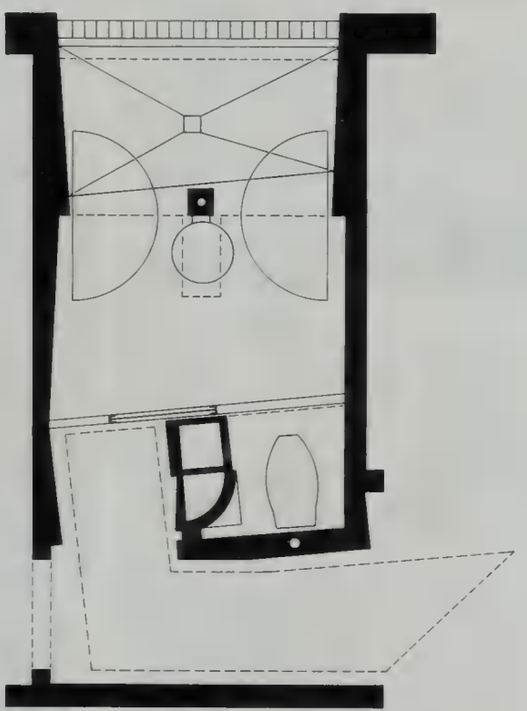
This hall and some walls of the bathroom are finished in a clear birch paneling. This wood was lightly rubbed with a white oil paint, then wiped and sealed, achieving a slight "pickled" effect which makes the surface more light-reflective.

Within the bath, almost everything is tile. The blue, cobalt, and bright yellow mosaics were installed in face-mounted sheets, then grouted. Even the wall switches were recessed to keep the plane smooth. The ceiling kicks down and up to create an entry for the wet column that holds the black enamel basin as well as the shower heads behind it. The architects detailed wood blocking behind the tile on this column to insure a firm mounting for the linear light and mirror—and to make sure the force needed to change the lamp won't pull the fixture out of the wall. Hinges on the large, tempered-glass shower doors allow each to swing in both directions. The glass-block partition is an exterior wall, which also lets the occasional Chicago sunbeam into the space. Radiant-heating coils under the floor in both bath and shower space make the room cozy. Cooled air is supplied through the narrow slot in the ceiling, and the shower is lit by exterior-grade halogen sources placed in a cove.

The birch cabinets next to the toilet are accessible from the hallway as well as from inside the bath.

Architect: *Camburas & Theodore Ltd., Architecture+Interiors, DesPlaines, Ill.; John Bradshaw and Ted Theodore, Jr., associate principals*

Sources: *Bizzaza Tile (metallic and glass tile); Krinkleglass (fiberglass door panel); Kroin (sink and faucet); Kohler (Water Guard toilet); Baldwin (hardware); Hewi (cabinet pulls); Osram (linear light source); Pittsburgh-Corning (Essex pattern glass block)*



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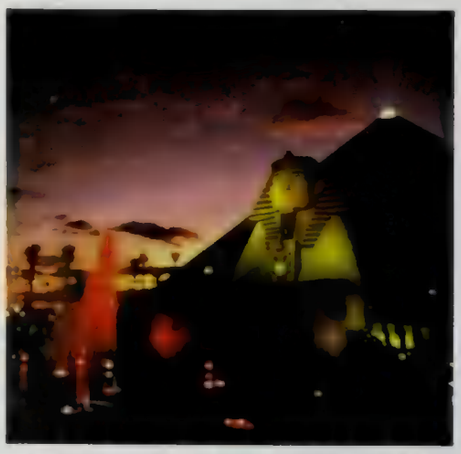
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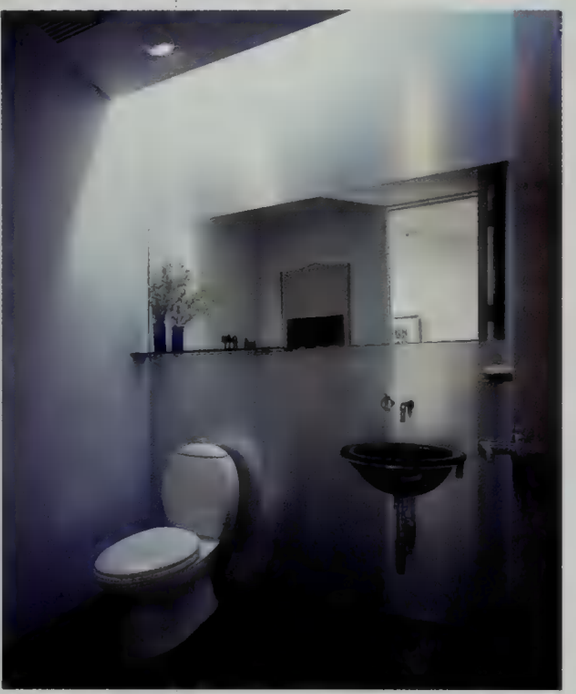
CLEVERLY PLACED GLAZINGS FILL A NEW ENGLAND HOME WITH LIGHT

Architect William Grindereng, formerly an associate of Paul Rudolph, describes his house in New Hampshire for a retired couple as Modern—*not* Postmodern. Light from clerestories, skylights, and large windows sheltered by deep roof overhangs fills the home even during long New England winters without sacrificing energy efficiency.

In the kitchen (below), illuminated glass-fronted cabinets have mirrored backs to further brighten the space; the work island is set below a skylight. A refinement: The gas cooktop is recessed into the granite countertop for a flush appearance. High clerestory awning windows are motorized for remote operation. Brushed aluminum panels in the powder room (below right) reflect light from a concealed narrow skylight. In the master bath (below left), glass-block walls divide the room from an adjacent solarium and enclose the large, steam-equipped shower. The double-basin lavatory spans the space between the tub surround and the shower.







Architect: *William Grindereng, Boston, Mass.*

Sources: *Kitchen—Impala Black Granite, Northern Marble and Granite (countertops); Caldera Inlaid Gas Elements (recessed cooktop); Elkay (sinks and faucets); Best (Slimline range hood). Master bath—Pittsburgh-Corning (Decora glass block); Emil Ceramica (floor and tub surround tile); Kohler (tub and basin); Dornbrach (tub fittings); Hansgrohe (lavatory faucets); Contemporary Architectural Products by Justin White (shower door assembly); Hewi (drawer pulls); Powder room—Yale (door hardware); Cherry Creek East, Inc. (blue-glass Vitraform lavatory); Vola (faucets); Black Pennsylvania State (floor tiles); IFO (watercloset); Throughout—Marvin Windows (operable and fixed windows); Wasco (skylights); Lightolier (downlighting); Benjamin Moore & Co. (paints)*

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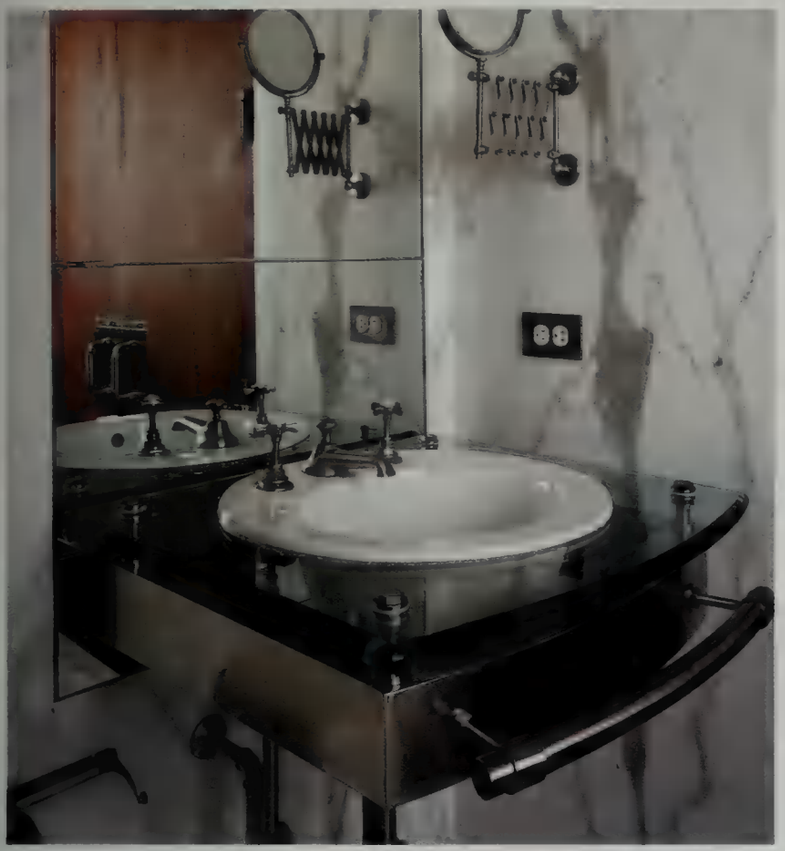


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BRUSHED-FINISH NICKEL, HEAVY GLASS, AND MARBLE ANCHOR NEW YORK BATHS



Turning a Greenwich Village carriage house into a residence for a Manhattan art collector and his large-scale objects involved a gut rehab of the interiors while maintaining the landmarked facade. Project principal Brian Connolly decided to treat the bath spaces shown here as fixed, sculptural elements in an otherwise flexible display environment.

Bath vanity counters, made of clear, 1-in.-thick glass set on cantilevered stainless-steel platforms, expose the nickel-plated plumbing, and don't intrude visually on the 8-ft high marble panels that line the walls of all the bath spaces.

This stone is a prominently veined Calacatta from Italy, selected specifically to provide random detail and pattern without many obtrusive joints or breaks. Bath storage cabinets are hidden behind flush-mounted mirrors. Interior doors and panels are a boldly grained oak, set with custom, brushed-nickel hardware.

The powder room is dominated by a custom mirror framed in satin nickel-finished steel (inset).

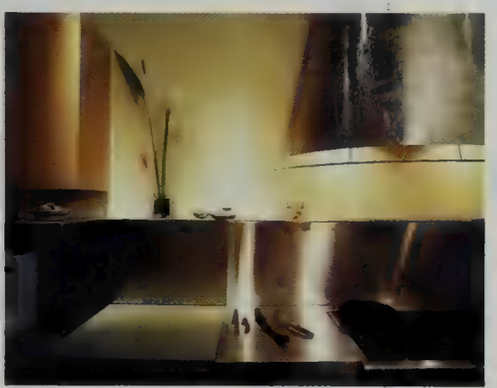
Architect: *Zivkovic Associates, Architects, P.C., New York, N.Y.; Brian Connolly, AIA, project principal; Declan Cullen, Howard Duffy, Anne Durkin, Claire Moore, project team*
Sources: *Kohler Co. (lavatory basin); Czech & Speake (faucets); Goldenrod Ironworks (custom vanities, nickel-finished mirror, and door hardware); K+K Marble (Calacatta marble)*



COLORED CONCRETE BECOMES A RICH, REFINED MATERIAL

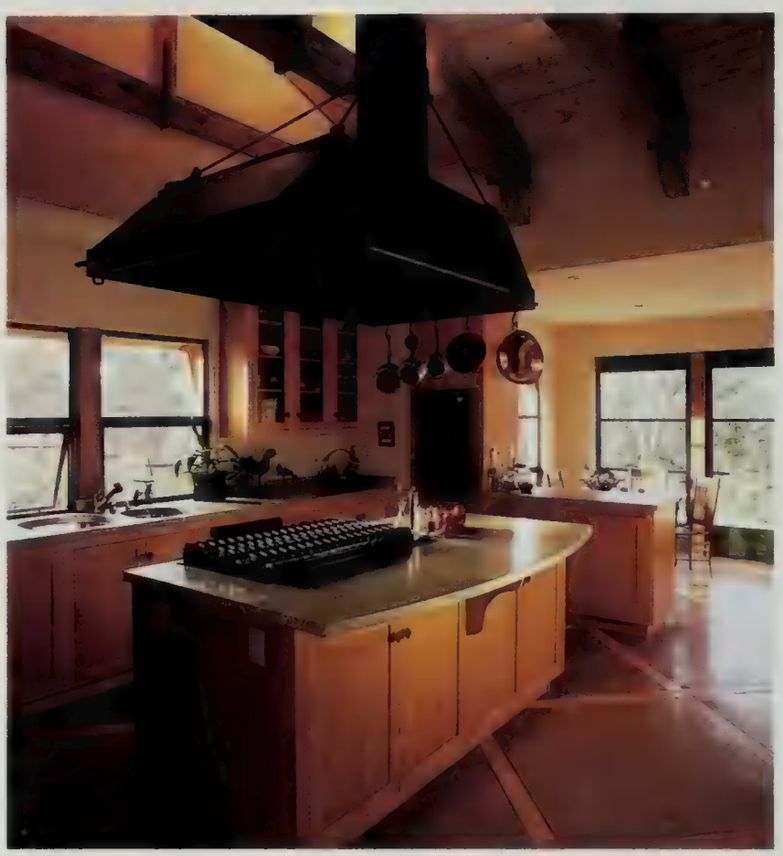
Artist/builder Fu-Tung Cheng used his firm's acquired expertise in casting, coloring, and forming concrete to good effect in this extensive remodel of a San Francisco Victorian. The defining compound curve of the monolithic counter that encloses the kitchen and separates it from a breakfast room beyond—prohibitively expensive if done in stone—was cast on site, integrally colored in green with a bit of aquamarine. In deference to the unit's weight and the site's seismic potential, steel rods tie the freestanding counter to the floor joists. Concrete work surfaces were done in the shop; an acrylic finish slows the material's potential for staining, but will have to be renewed periodically if a "used" patina isn't wanted. The flooring, a 1-in.-thick concrete topping over the existing wood floor, is tinted light black. The high ceiling was slightly arched to give the kitchen a sense of intimacy and warmth absent from the more austere living and dining spaces. The stainless-steel counters, sink, and shelving was formed over a rod to produce a clean edge. This bar spans the space between cabinets under the architect-designed range, working as a minimalist shelf. Anigre cabinetry has been stained green to blend with the concrete; other units are natural Douglas fir.



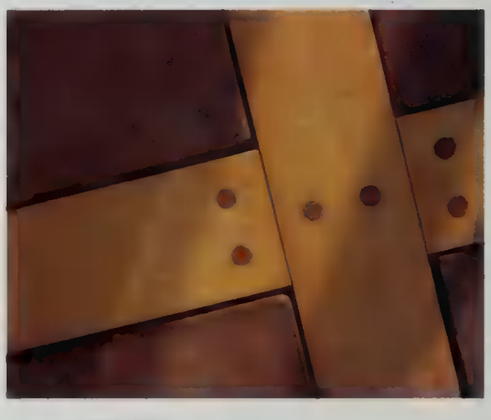


Designer: *Cheng Design, Berkeley, Calif.; Fu-Tung Cheng, principal; Janet Szalay, Chris Tong, project designers*
Sources: *Wolf Range (cooktop); Harcross (integral concrete colors); Leviton (Decora switchplates); Sub-Zero (refrigerator); Grohe (Ladylux faucet); Nor-Cal Metal Fabricators (custom range hood); Andrus Sheet Metal (stainless-steel fabrication); Cheng Design & Construction (concrete floors and counters); CSL (MR16 spots); Gaggenau (built-in ovens); Metalux (fluorescent uplighting); Forms+Surfaces (pulls)*

HAND-CAST CONCRETE MIMICS STONE IN FARMHOUSE-STYLE KITCHEN



Gary Orr's clients wanted a "contemporary Tuscan farmhouse" that would support their convivial approach to food and its preparation. And as their lot on the edge of California's Napa Valley shared views of wooded parkland and grapevines seen enfilade from the kitchen windows, there was an almost Mediterranean building site. Orr created two work islands of hand-cast concrete, a material which permitted a multilayer buildup of color. The result is an almost perfect replica of time-worn stone with a matte gloss. The decorative corbels that "support" the sawn Douglas fir trusses are precast distressed concrete, bolted to the wall. The true divided-light aluminum windows have been painted to match the green of the surrounding oak leaves. The concrete floor is sectioned into large squares by maple strips screwed into wood sleepers cast into the concrete. All metal components—light fixtures, truss brackets, and the range hood—are of pre-rusted steel, finished with car wax to retain the warm-brown color.



Architect/Landscape Architect: *ORR Design Office, Sacramento, Calif.; Gary Orr, principal*
Sources: *Buddy Rhodes (integrally colored concrete countertops); InFloor (radiant heating); All Weather (windows); Russell (cooktop); Creeda (convection ovens); Grohe (sinks and faucets)*

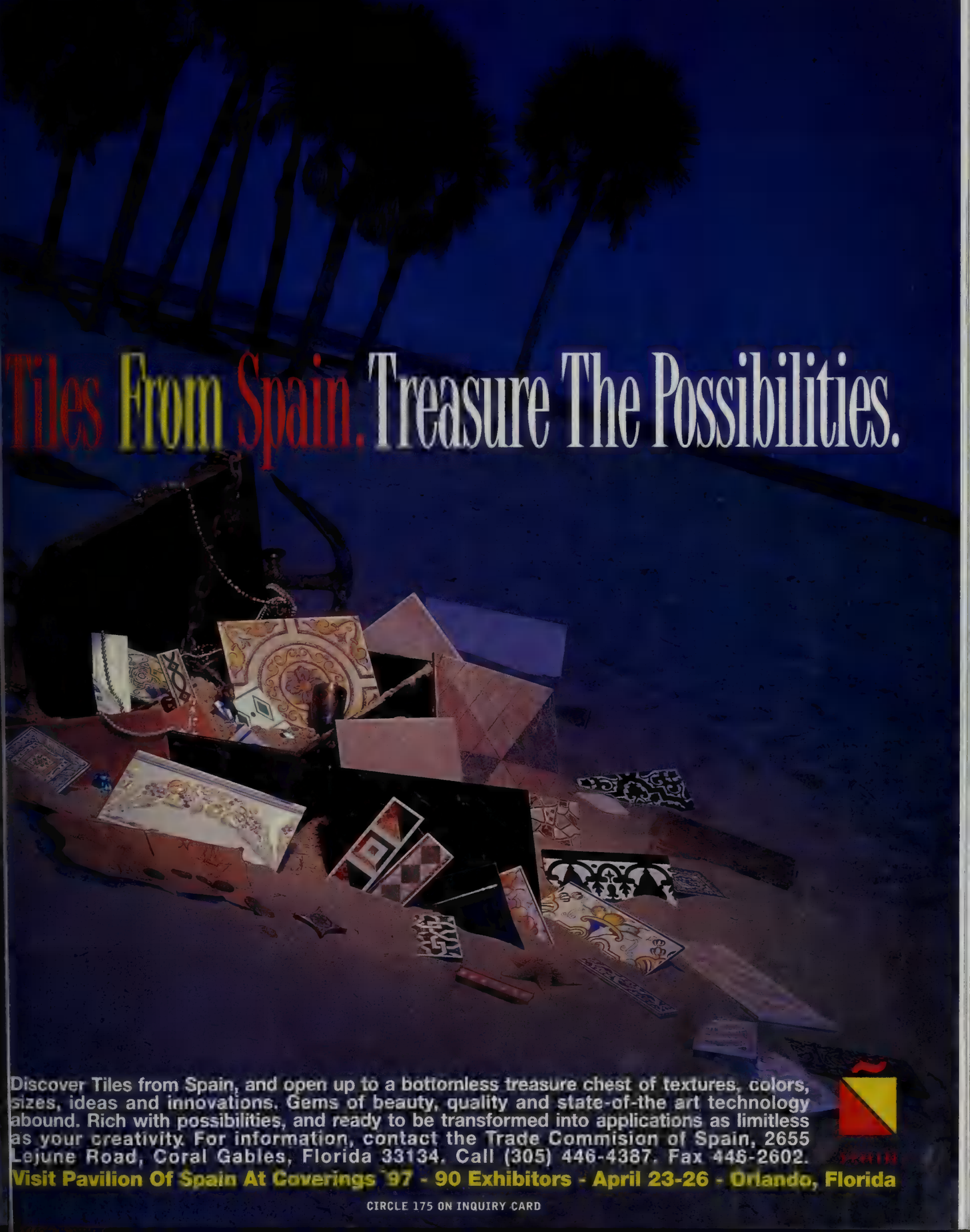
DESIGN ELEMENTS WORK DOUBLE DUTY IN URBAN/RURAL KITCHEN HYBRID

This pale-green kitchen is a mix of urban and rural: Part of a city loft landed in the midst of a grove of cedars, according to architect James Estes. The clients wanted no extraneous details, so elements work double-duty: Window sills are display shelves, for example, and the sandblasted-block backsplash becomes part of the entrance hall. Detailing is minimal, with quarter-round moldings used as wall base and as window casings. The green color, used throughout the house, is sponge-painted on skim-coat plaster. Engineered-wood beams, chosen for their long-span capacity at a relatively narrow cross section, have been left "natural," just sanded and sealed.

Architect: *James Estes and Company, Architects, Newport, R.I.*
Sources: *Pittsburgh-Corning (sandblasted glass block); Fountainhead (countertops); Viking Range (cooktop); General Electric Appliances (oven); Trus-Joist MacMillan (Paralam joists)*






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DECO DETAILS AND SLEEK FITTINGS BOOST THE STYLE OF A GUEST BATH

The owners of a large home set on a dramatic site on the west coast of Florida wanted major space for entertaining. The main floor, raised well above any anticipated maximum storm-water level in a high-wind velocity zone, contains a spacious media room as well as a skylit foyer, living room, and formal dining room. There's also a 10-ft-long, 500 gallon, saltwater aquarium with its own room-sized maintenance closet!

So architect Dale Parks wanted to give the guest powder room some animation and extra impact to help the closet-sized space hold its own. This ancillary room is designed to be invisible from the hallway side, without breaking the flow of the mahogany-veneer paneling that lines the foyer. The door frame is concealed, placed flush with the wall. A top-mounted, self-closing mechanism opens the door at a push, and automatically closes it as well. The lavatory was chosen for its sculptural effect, with a copper-clad, tapering pedestal that seems to balance the blue-glass bowl on its nose. The brushed-nickle mirror and anthropomorphic torchière recall the torch-bearing arms that appear in Jean Cocteau's 1920s film *Beauty and the Beast*. Wallpaper has light-catching flecks of mica, and the black granite floor tile has copper-like inclusions.

Architect: *Cardinal+ Parks Architects, Sarasota, Fla.; Dale S. Parks AIA, principal*
Interior design: *Lea Jackson Interiors*
Sources: *Kroin (faucet); Maya Romanoff (Wall-Mica wallcovering); Hastings- Il Bagno Collection (lavatory); Brueton (mirror); Kohler (toilet); Lightolier (recessed lighting)*



HANDCRAFTED TILES ADD COLOR AND STYLE TO A REMODELED BATHROOM



The owner of a vintage 1920s Tudor wanted a bath with the subtle, earth-and-water colorations and crafted appeal of the old Pewabic tiles of her native Detroit. But the bath's sinuous shapes had to fit into the rigid box established by two doors and the small-paned windows set into the half-timbered exterior. The tiles selected for the renovation, from a small kiln in the Napa valley, have soft, irregular edges that ease the squares and rectangles into contours that can follow the bath fixtures, and let the tile installer adjust the grout space to suit irregular walls. A walnut bullnose helps the tiles transition into the curves of the tub surround. The custom shower stall has a patinated-copper roof; faucets and shower fittings are nickel-finished. The tile layout was done on full-size templates with Prismacolor markers. The lavatory, set on a lacquered plywood stand, is siliconed to the glass shower wall.



Architect: *Duo Dickinson, Madison, Conn.*
Sources: *Kohler (tub and basin); DuPont Corian (vanity top); Miroir Brot (mirror); Duschqueen (shower surround); McIntyre (ceramic tile); Harden (faucets); Outwater Plastics (cove lights); Lightolier (downlight); Glasshütte Limburg (shower light); Lucifer (Puck light spots); Wood Design (custom cabinets); Myson (towel warmer); Runtal (radiator)*

I dream things that never were; and I say, "Why not?"

– George Bernard Shaw

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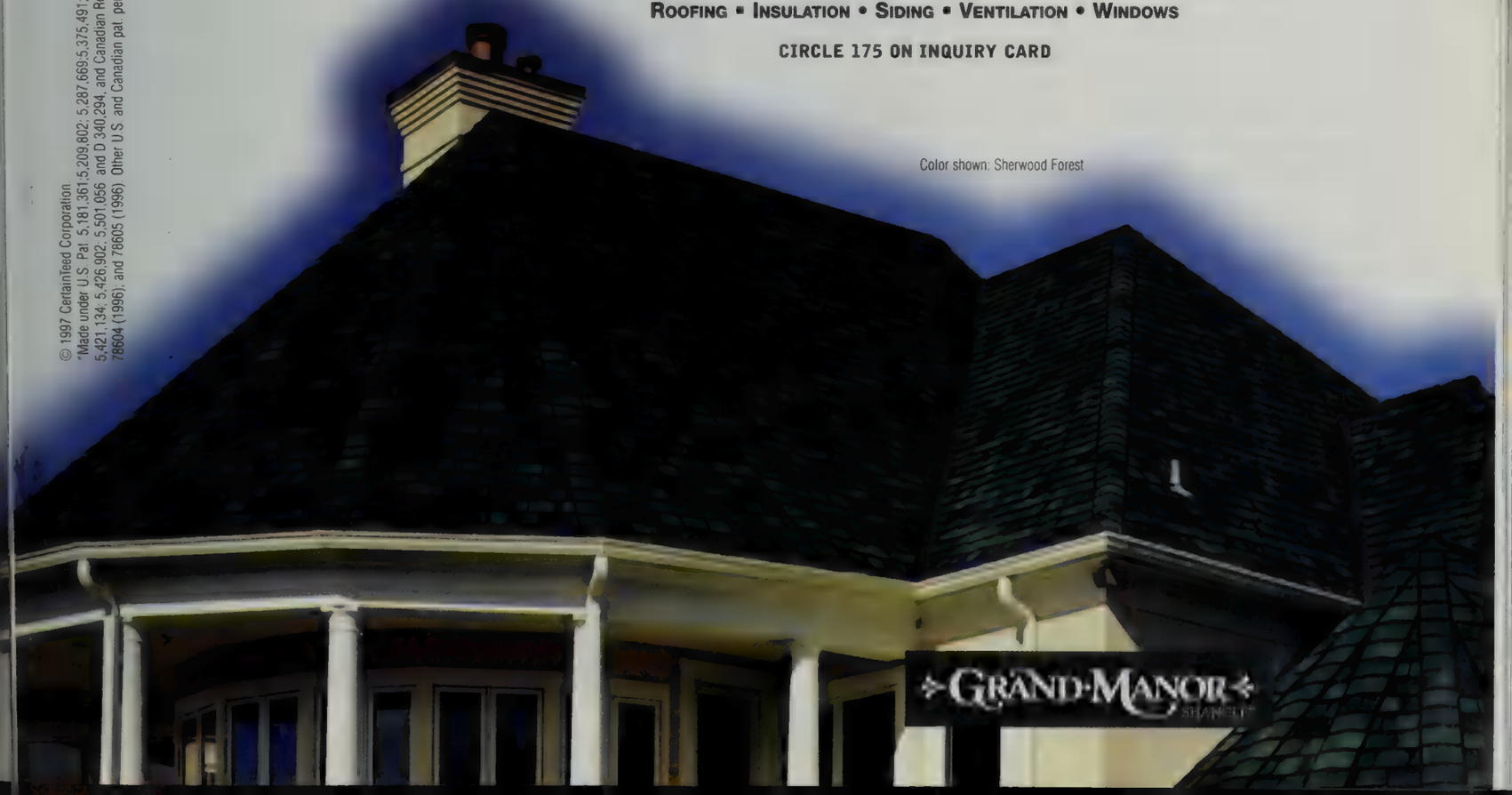
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Color shown: Sherwood Forest

BATH SPACES MAKE THE MOST OF LIMITED SQUARE FOOTAGE



This ground-level master bath in a weekend home in Pennsylvania Dutch country uses warm cherry wood cabinetry and edging to take some of the coolness from the stainless-steel counter and basin. Over the vanity counter is a large expanse of mirror, flanked by decorative framing elements of stainless steel (to the left), and colored glass (same view, out of sight to the right). A very contemporary Italian low-voltage track light, normally placed on the ceiling in a display setting, has been mounted vertically against the mirror. Architect Daniel Snyder designed a conveniently positioned stainless-steel element that wraps the front of the counter, becoming a towel bar in front and turning up a bit at the end to hold toilet paper. In the treetop-height guest bath upstairs (right), a small, narrow awning-type window frames a postage-stamp-sized view out. Here the wall of mirror and glass has shrunk to become only a swing-arm mirror, positioned above a white vanity sink that triples as basin, counter, and towel bar.

Architect: *Daniel E. Snyder, AIA, Savannah, Ga.*
Sources: *Flos, Inc. (Flight System light); American-Olean (tile); Baldwin (cabinet pulls); Kountry Kraft Kitchens, Inc. (cherry cabinets); Port City Metals (towel bar); Porcher (guest sink); Peachtree (window); Lightolier (linear light); Kohler (faucets and toilet); Samuel Heath & Sons (soap dishes)*



HORSE-COUNTRY KITCHEN WORKS WITH A MIX OF WOODS

This kitchen is one corner of a four-square house divided into three parts—eat/cook; live; and sleep/wash—overlooking a pond in Kentucky bluegrass country. Based on vernacular farm buildings and constructed of standard items on a modest budget, the 28- by 42-ft house meets the current needs of its single owner without compromising future resale value.

Architect Scott Guyon used a variety of native Kentucky hardwoods in the kitchen—clear and rock maple, poplar, and oak—to provide color and texture without clashing with the stainless-steel appliances and black countertops. The red oak floor is made of common grade shorts, pieces which vary in color and length, while the cabinets are a clear, blond maple with minimal graining. The glazed doors of the upper cabinets have a semi-obscuring filigree muntins. The kitchen—in fact, the entire house—is painted in different shades of gray: one set of colors for the north/south walls; a slightly different mix of gray for east/west ones. A shallow wine rack is tucked above the full-height refrigerator.

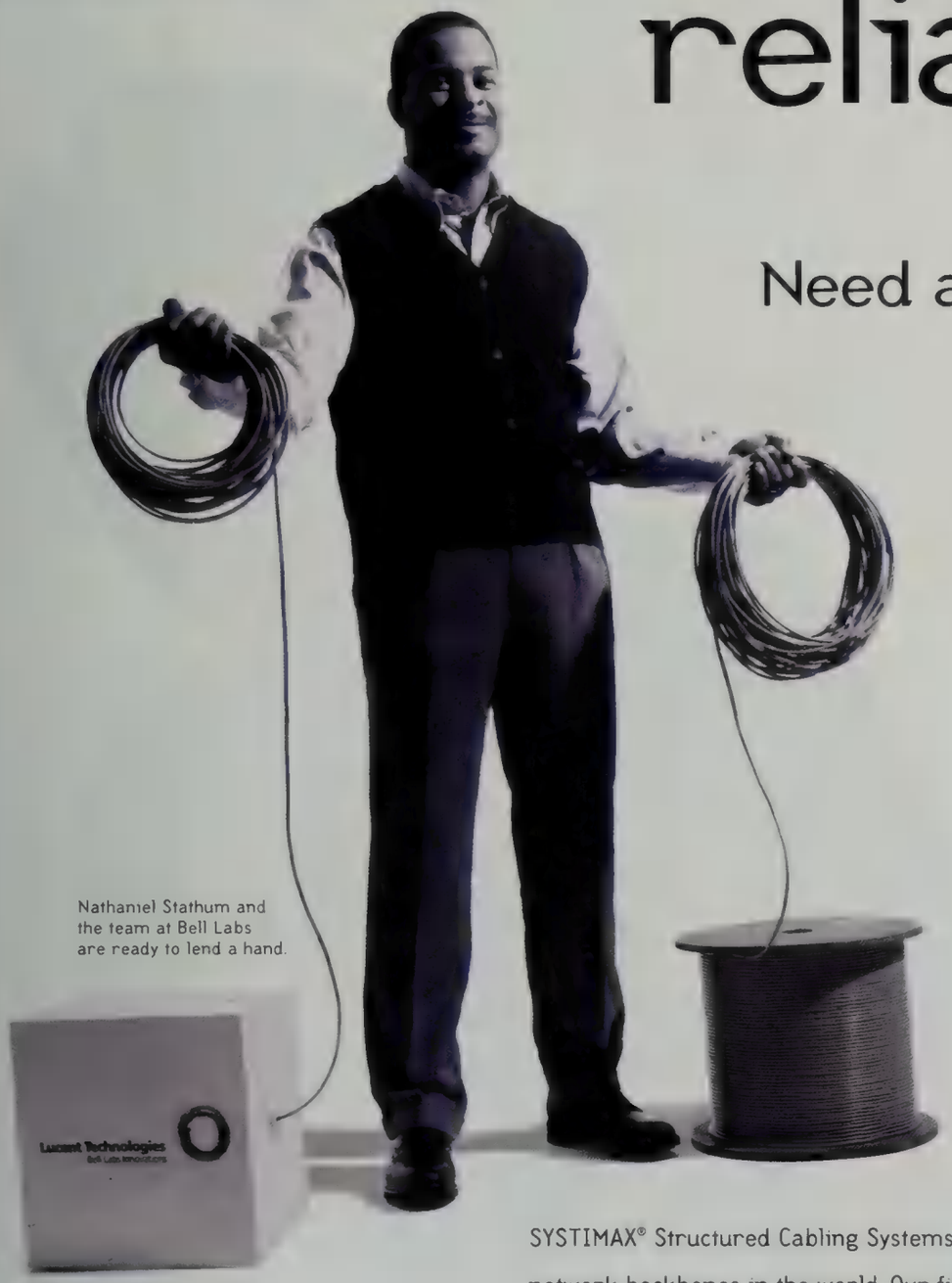
Architect: *Guyon Architects Incorporated/The Studio for Architecture, Lexington, Ky.; Scott Guyon, AIA, principal; Paul Swisher, project architect; Mike Meyer, project team*
Sources: *Schlage Lock Co. (lever-handle hardware); American-Olean (ceramic wall tile); Peerless (faucet); Kohler Co. (kitchen sink); General Electric Appliances (Profile refrigerator); Pittsburgh Paints (interior paint); Jenn-Air (range); Formica Corp. (Surell countertops); Halo (halogen downlights); Lightolier (pendant fixture); Crate and Barrel (chairs)*



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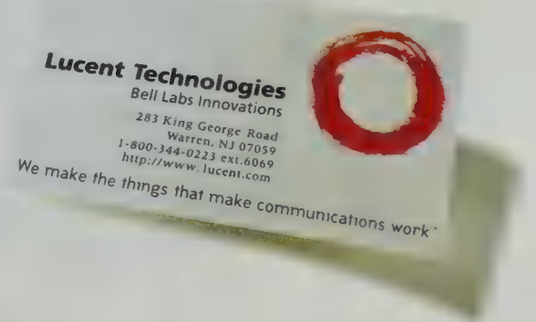
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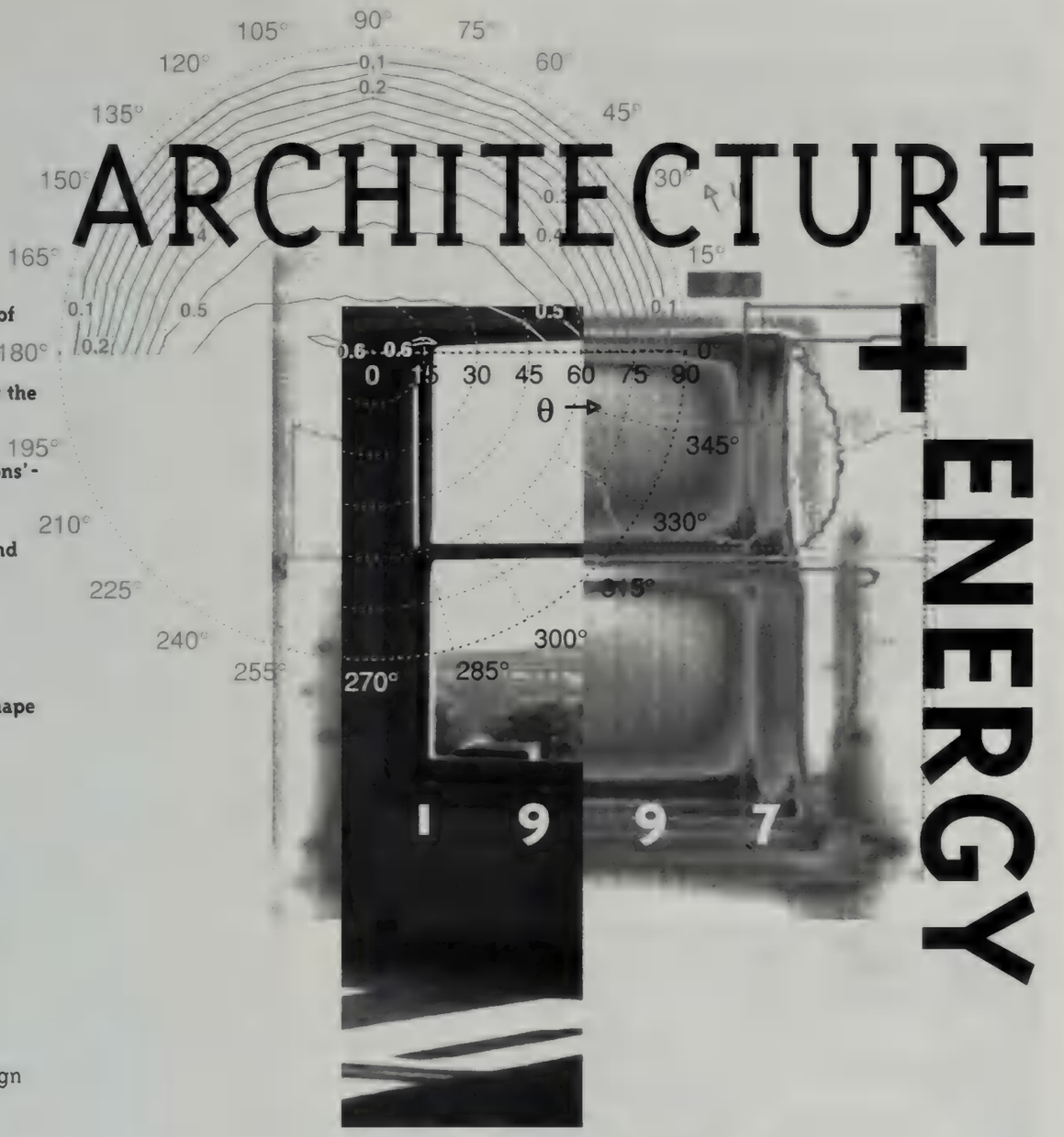
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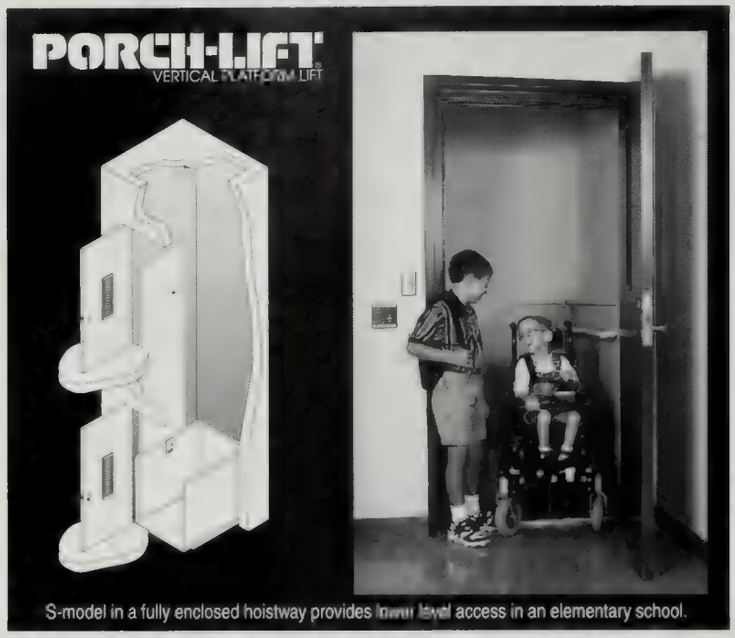
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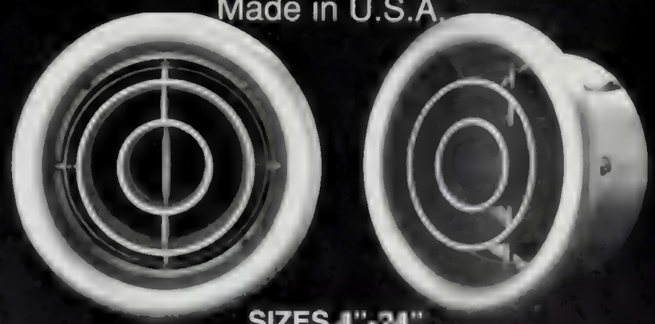
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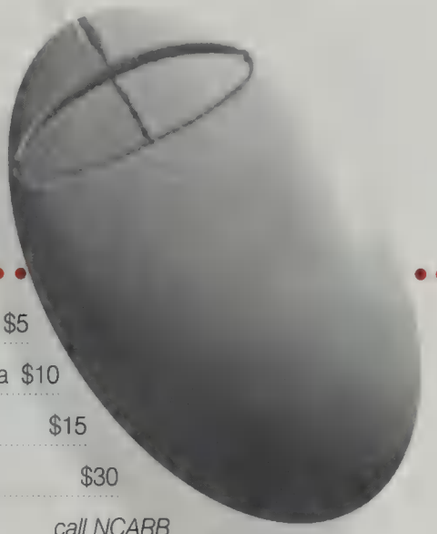
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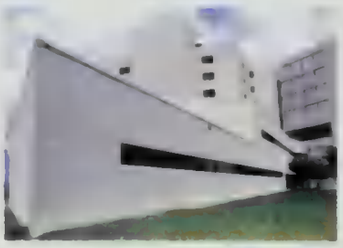
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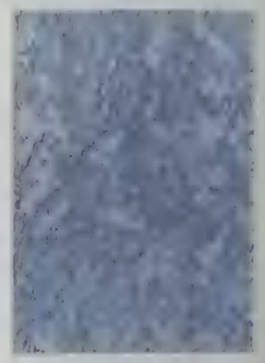


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CIRCLE 183 ON INQUIRY CARD

NEW PRODUCTS

New Products this month introduces an escalator designed to work within a smaller footprint, saving valuable retail floor space while attempting to provide ■ greater measure of user safety. This concern for safety is particularly necessary in ■ large-store environment, where small children and less-nimble seniors try to navigate in ■ press of fast-moving shoppers. Also featured: flooring with specific applications for retail. And the Briefs page highlights some new products for residential kitchens and baths, from flattering mirror lights to gas-burner woks for the feng shui kitchen. ***— Joan F. Blatterman, New Products Editor***

SLIMMER, SLEEKER ESCALATOR FITS INTO RENOVATED RETAIL

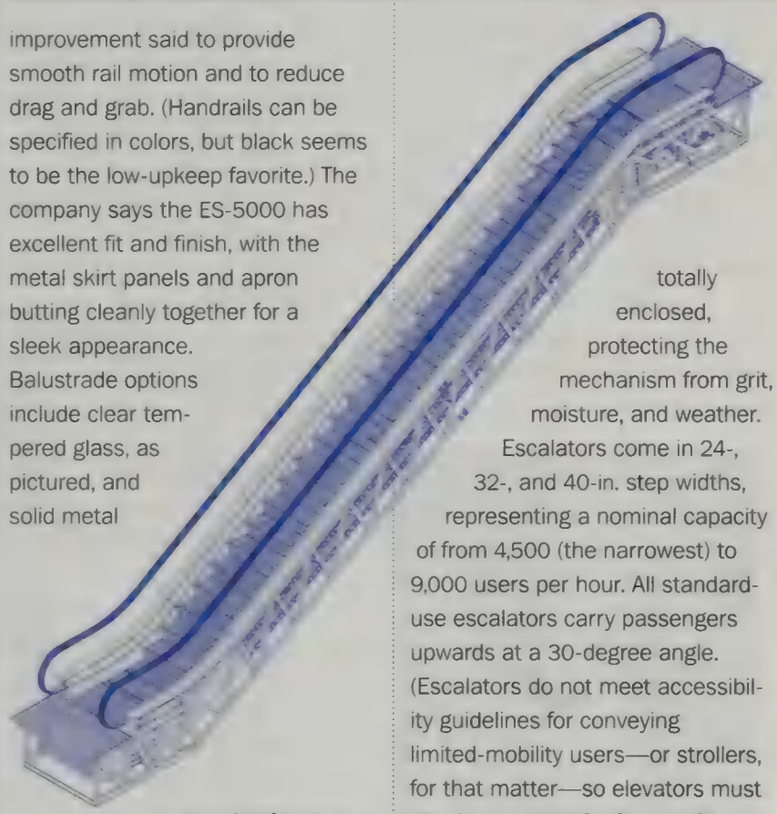
The Montgomery Elevator company, headquartered in Moline, Illinois, was purchased in 1994 by the KONE group, a large elevator holding company based in Finland and Belgium. The merger made Montgomery part of the third largest elevator/escalator business in the world, behind only Otis and Schindler. (The word escalator was coined by Otis for their moving staircase introduced at the Paris World Fair in 1900, but it soon became the generic term.)

The first new product from the resulting company, Montgomery KONE, Inc., was introduced in 1996 specifically for the American market. An extensive reworking of escalator technology, it has a totally enclosed drive system instead of a chain drive, which can tend to be noisy over time. Called the ES-5000, the new design is a relatively compact escalator particularly suitable for renovation applications. A smaller installation envelope (shorter front to back than other Montgomery escalators) is said to minimize the unit's footprint and save expensive floor space.

Passenger safety features

The mechanism and step/skirt interface incorporate several user-safety enhancements that exceed ASME code. For example, the step-guidance system leaves a gap of only 1/16 in. between escalator steps and skirt panels throughout stair travel, where code maximum permits 3/16 of an inch. A supportive axle under each individual tread positions the step firmly, reducing the chance for unnerving side-to-side shimmy. The natural-color aluminum steps are printed with colored edge markings that remind passengers where the safest standing position is. And the escalator approach deck and balustrade trim have no protruding screw heads that might catch shuffling feet or snag clothing.

Components such as the handrail are slimmer to present a less obtrusive profile. The handrail itself travels on a "floating" air bearing between rail and balustrade, an improvement said to provide smooth rail motion and to reduce drag and grab. (Handrails can be specified in colors, but black seems to be the low-upkeep favorite.) The company says the ES-5000 has excellent fit and finish, with the metal skirt panels and apron butting cleanly together for a sleek appearance. Balustrade options include clear tempered glass, as pictured, and solid metal panels of satin- or mirror-finish stainless-steel or bronze.



Installation and maintenance

The E-Series 5000 is partially assembled in the factory, and shipped to the job site in subassemblies that are said to save installation time. The drive system is totally enclosed, protecting the mechanism from grit, moisture, and weather. Escalators come in 24-, 32-, and 40-in. step widths, representing a nominal capacity of from 4,500 (the narrowest) to 9,000 users per hour. All standard-use escalators carry passengers upwards at a 30-degree angle. (Escalators do not meet accessibility guidelines for conveying limited-mobility users—or strollers, for that matter—so elevators must also be provided for floor-to-floor transportation.) Metal-finish options include #4 or #8 stainless-steel or bronze; the safety-marking step inserts come in yellow, red, or dark gray. Architectural details and loading data are offered in CD-ROM format. 800/956-5663. Montgomery KONE, Moline, Ill.

CIRCLE 250





A department store installation (far left) shows how glass balustrades minimize the visual impact of the ES-5000. Inset photo details the close fit between steps and skirting; flexible "combs" at the step-landing interface keep objects out of the mechanism.

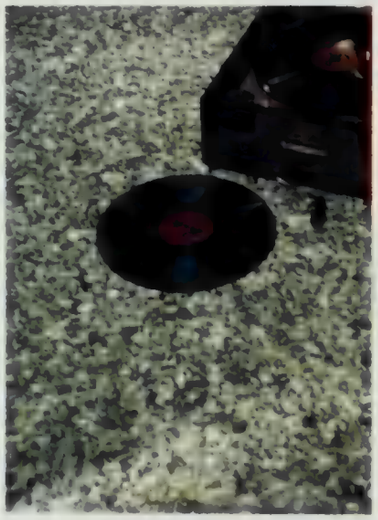
FLOORING IN THE MARKETPLACE MUST FIT DIVERSE PROGRAMS

Floor treatments for a selling environment must meet an extremely wide and demanding range of performance and appearance criteria—some of which might contradict each other.

The floor design should contribute to the retail niche or statement desired by the owner, whether the no-frills, price-is-right atmosphere of a big-box outlet, the "excitement" of a themed merchandiser, or the hushed mood and Gucci-clad foot traffic of an upscale boutique. The material selected must anticipate the level of maintenance possible within the store, and respond to slip-and-fall liability concerns. Flooring should look fresh with a minimal maintenance program until the owner decides to replace it, and should provide walking and standing comfort for customers and sales personnel alike. And, of course, it can't cost too much.

Trade associations in the flooring industry can provide architects with guidance on specific performance issues. For example:

- Carpet & Rug Institute, Dalton, Ga. 800/882-8846
- Tile Council of America, Clemson, S.C. 864/646-8453
- National Wood Flooring Association, St. Louis. 800/422-4556
- Resilient Floor Covering Institute, Rockville, Md. 301/340-8580



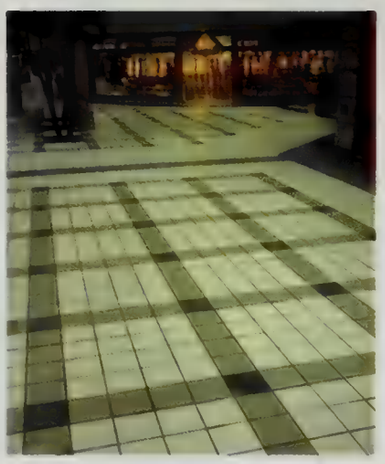
◄ Resinous terrazzo

A granite or terrazzo look at lower per-square-foot cost, Fritztile has a resilience that permits installation over old flooring, and is said to prevent damage from impact or chipping. Water absorption is less than 0.4 percent; the compressive strength of the polyester resin/stone-chip tile exceeds 3000 psi. Granite Supreme tile comes in 14 colors, gauged to meet different traffic loads. 800/955-1323. Fritz Industries, Dallas. CIRCLE 251



◄ Stained concrete flooring

Architects FRCH Design Worldwide used Bomanite's Patene Artectura process, introduced last year, to replicate a desired but unavailable slate as an effective retail design element in an Eddie Bauer store. A1 1/2- to 3-in.-thick epoxy-bonded overlay leveled the existing floor, and was imprinted with a slate pattern. The concrete, scored in 12-in. squares to resemble tiles, has been chemically stained in soft yellows and beiges and finished with a clear sealer. 209/673-2411. Bomanite Corp., Madera, Calif. CIRCLE 254



◄ Super durable

ImpervaGranite porcelain stoneware addresses the heavy-traffic and minimal-maintenance requirements of large malls, while responding to slip-and-fall concerns with excellent coefficient of friction performance. The tile-making process uses recycled feldspar, and produces a dense surface (a latex-modified setting mortar should be specified). Summitville, Summitville, Tenn. CIRCLE 252

▼ "Red Oak" resilient

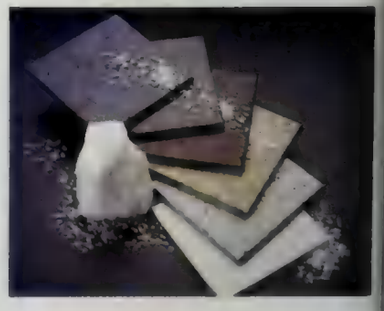
Described as a "practical" flooring with the warmth of wood, Lonwood Dakota is commercial-grade sheet vinyl offered in three oak shades and six stain effects, suggested for "dramatic retail interiors." Seams can be welded for a moisture-proof surface. Samples: 800/832-7111. Lonseal, Carson, Calif. CIRCLE 253





▲ Carpet speaks softly

Shown here in a men's specialty store designed by Vanderbyl Design, Bentley Mills' Grande Camden broadloom of Ultron nylon was installed in 3 1/2-ft squares of putty and cream. The carpet created a neutral background for the colorful haberdashery, as well as the unifying, bespoke ambience desired by the retailer. 800/423-4709. Bentley Mills, Inc., City of Industry, Calif. CIRCLE 255



▲ Engineered stone tiles

A rugged agglomerate quartz material suitable for heavy-traffic floors, Granirex now comes in a semi-gloss finish said to provide a desirable "shiny" appearance while having a higher level of slip resistance. 773/471-0700. Terrazzo & Marble Supply, Chicago. CIRCLE 256



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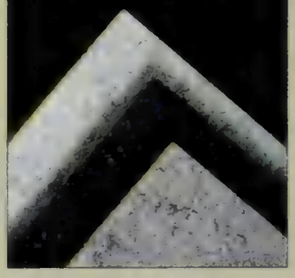
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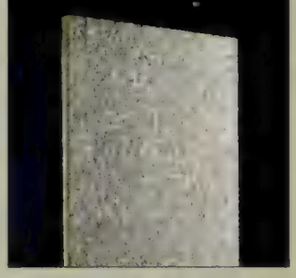
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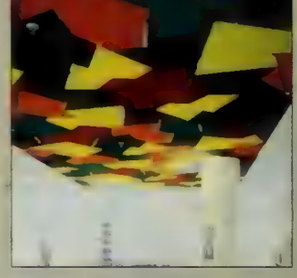
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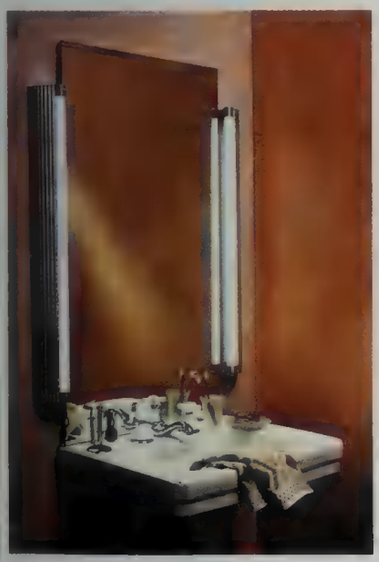


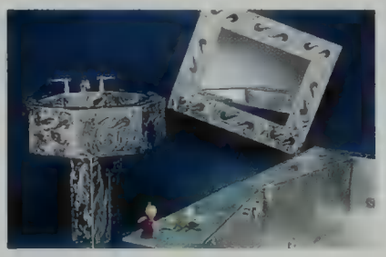
◄ Edwardian/Swiss

Franke's Manor House gooseneck-style kitchen faucet combines an "Upstairs/Downstairs" look with contemporary, durable valving. Finish options include pewter (shown), NuBrass non-tarnish brass, and chrome. Handles can be specified in colors that match popular solid-surface materials. 215/699-8761. Franke, Inc., North Wales, Pa. **CIRCLE 258**

▼ Mirror illumination

Rated for damp locations, Ron Rezek's Doric mirror light is designed for use in pairs, on either side of a mirror, or singly, across the top. Only 4 1/4-in. wide, the Doric comes in 24 1/4-, 36 1/4-, and 48 1/4- lengths. An asymmetric profile angles the light source towards the mirror, not directly at the user; lamps deliver high-color-rendering 3000K light, said to "enhance the quality of the human reflection." 516/694-9292. Artemide, Inc., Farmingdale, N.Y. **CIRCLE 257**





▲ Custom steel fixtures

Diamond Spas makes tubs, showers, and pedestal sinks in unusual shapes such as triangles and octagons, all in hand-buffed, 16-gauge #304 stainless. 303/665-8303. Diamond Spas, Inc., Broomfield, Colo. **CIRCLE 259**



▲ Italian-design range hoods

Sleek vent hoods make a strong statement, or use glass to minimize visual impact. Italian-made by Best, illuminated hoods come in ceiling- or wall-mount styles; finish options include copper, stainless, brass, and enamel. 800/548-0790. Broan, Hartford, Wis. **CIRCLE 260**



▼ Stainless-steel gas cooktops

Professional Series equipment offers new features such as this 30,000 BTU wok burner, also useful for industrial-size pots, and a continuous grate design for flexible cooking-pot placement. Design guide gives all dimensions and venting options. 800/656-9226, x15 Thermador, Los Angeles. **CIRCLE 261**



▲ Completely commercial

Rounding out its line of professional-style home-kitchen equipment, Viking now offers refrigerator/freezers, wine coolers, and ice makers in a classic, restaurant stainless-steel finish as well as the firm's blue, deep green, burgundy, plum, and teal color options. Dual-door refrigerator units come in 36-, 42-, and 48-in. widths, in ▪ built-in, 24-in. depth. Stainless handles are standard; brass trim is available. 601/455-1200. Viking Range Corp., Greenwood, Miss. **CIRCLE 263**

▼ Elliptical pedestal sink

A new style, the LaRive pedestal is made of vitreous china in a range of 18 standard Gerber colors, from British Biscuit to Citron Yellow. The sink bowl is generously sized—25-in. wide and over 21-in. front to back: large enough to bathe a baby. Can be specified for either 4- or 8-in. on-center faucets. 847/675-6570. Gerber Plumbing Fixtures Corp., Chicago. **CIRCLE 264**



◄ Shaker-style goes German

Considering food preparation "the theater of the 90s," designers for the German manufacturer Poggenpohl have extended their high-tech approach to the kitchen to include less "Modern" motifs , such as this new Shaker style. Now more widely available in the U.S., today's Poggenpohl cabinetry offers more and brighter colors, flexible modular dimensions, and two levels of ergonomically efficient working surfaces. 310/289-4901. Poggenpohl U.S., Inc., Los Angeles. **CIRCLE 262**



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A CD-ROM featuring over 140 commercial projects utilizing Andersen Windows is available free. The disk contains a portfolio of Andersen commercial projects since 1959, and allows users to search for specific window applications among these projects by window, wall, and building type, and view installation notes and details. 800/426-7691. Andersen Corporation, Bayport, Minn. **CIRCLE 265**

Engineered wood at home

The advantages of using engineered wood products in home building are detailed in a new brochure from Willamette Industries. For example, engineered wood joists and boards make strong, quiet floors because these products don't shrink or warp. 542/926-7771. Willamette Industries, Engineered Wood Products Division, Albany, Ore. **CIRCLE 266**

Safety floors with style

New colors are now available from Altro Floors in heavy-duty safety flooring for applications including food processing, pharmaceutical production, and busy office corridors, as well as slip-resistant flooring specifically for use in wet areas. Altro now offers 25 colors of heavy-traffic flooring, including cobalt, jet, and garnet, and 10 colors of textured safety flooring for use in showers and bathrooms in hotels, schools, and hospitals. Both floors meet the current slip resistance/static coefficient of friction requirements of the Americans with Disabilities Act (ADA) and the Occupational Safety and Health Administration (OSHA). 800/382-0333. Altro Floors, San Francisco. **CIRCLE 267**

Colorful concrete countertops

Concrete countertops, sinks, tabletops, mantels, hearths, floor tiles, and architectural details including corbels and bases are available in more than 20 colors from Get Real Surfaces. The company creates custom, precast-concrete items with a variety of surface textures. It is possible to cast objects, such as colored glass or hardware, into the concrete surfaces. 914/452-3988. Get Real Surfaces, Poughkeepsie, N.Y. **CIRCLE 268**

Roofing systems reviewed

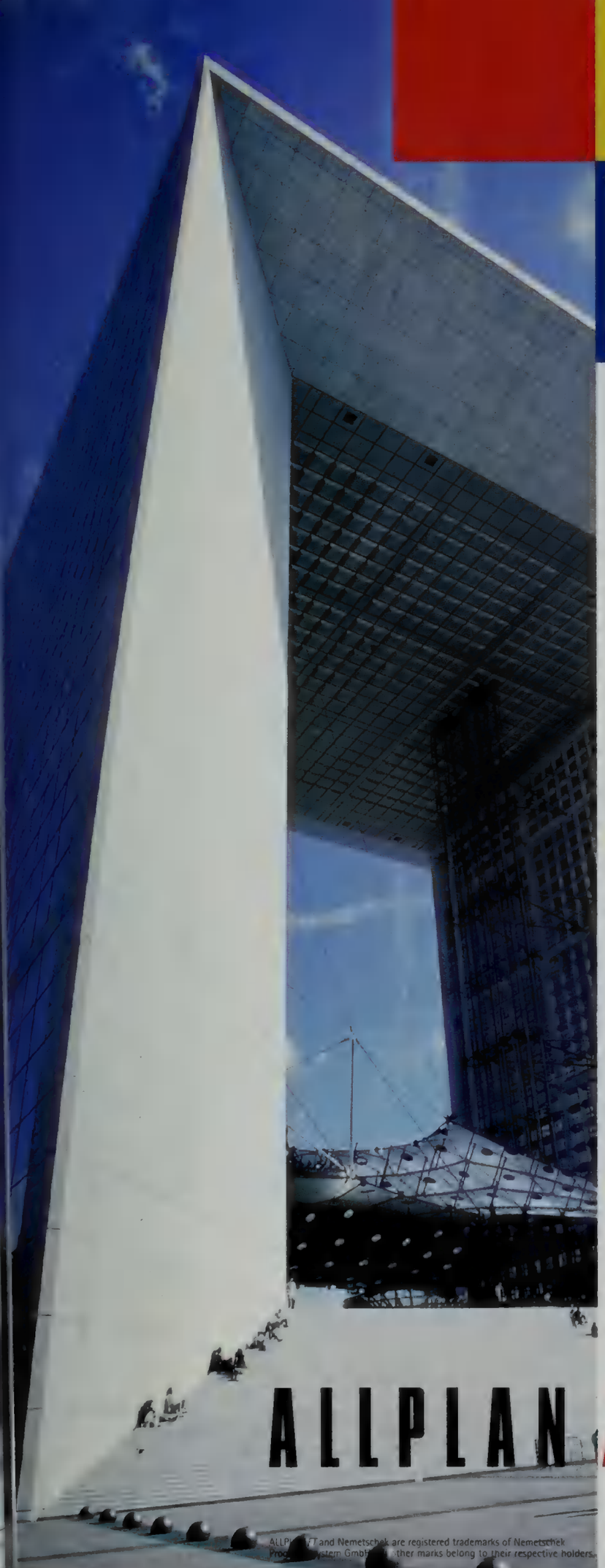
New catalogs from Siplast describe lightweight concrete roof insulation systems and bitumen roofing systems in detail. The insulation systems literature offers a comparative analysis of Siplast Roof Insulations to ordinary rigid board, and the bitumen systems catalog describes the Veral Spectra Series and Paratread, the SBS modified bitumen walkpad. 800/922-8800. Siplast, Irving, Texas. **CIRCLE 269**

Snap-on window grilles

A window can be given a different look with a snap-on perimeter grille from Weather Shield. Grilles are available in seven patterns and five woods to match window interior. 800/477-6808. Weather Shield, Medford, Wis. **CIRCLE 270**



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DATES EVENTS BOOKS

Calendar

March 14-15
Harvard University
Graduate School of Design
Cambridge, Massachusetts
Two days of lectures will cover the design, usage, and construction of the Florence Cathedral, including the remarkable engineering of Brunelleschi's dome. Call 617/495-1000.



Through March 15
The Equitable Building
New York City
An exhibition of over 100 photographs taken in a seven-year effort commissioned by the Canadian Centre for Architecture in Montreal, *Viewing Olmsted: Photographs by Robert Burley, Lee Friedlander, and Geoffrey James,* documents the landscape designer's prolific work on parks, estates, and cemeteries across the U.S. Call Nancy Amiel, 212/314-2811.

March 19-20
Los Angeles Design Center
WestWeek 97 will celebrate European furniture and interior design with major sponsors and keynote speakers from Italy, France, and Spain. Call Bret Parsons at 310/657-0800, ext.240 or fax 310/652-8576. The event will be followed by tours of Los Angeles architecture on the 21st and 22nd. Call Architours at 213/294-5825.

April 4-6
Sheraton Palace Hotel
San Francisco
A joint AIA conference of the International [illegible] and Practice and Interiors Committees [illegible] the [illegible] of current and future [illegible] of U.S. clients opening [illegible] and foreign standards in [illegible] contracts. Call 800/242-3837.

April 4-6
The National Solar Energy Society
Washington, D.C.
The National Solar Energy Society will present a collaborative conference with several organizations, including the AIA. The program covers sustainability, viability, and the prosperity of renewable and solar-energy technologies. AIA Learning Units can be earned. Contact the AIA at 800/242-3837.

April 4-6
Asilomar Conference Center
Pacific Grove, California
The AIA California Council will hold its 13th Monterey Design Conference, called *1,000 Days: Designing the Future.* An international group will address the issues. Call Traci Bockes at 916/448-9082.

Through April 21
Washington University
St. Louis, Missouri
A series of Monday-night lectures will conclude with Fumihiko Maki speaking on *Image, Figure, and Materiality.* Contact Ann Nicholson at 314/935-5251.

April 23-25
The University of Kansas, Lawrence
Commonly used planning for warehouses, factories, and other industrial facilities will be the subject of a three-day course offered by the Continuing Education Department. The cost is $995. Call Mary Heberling at 913/864-3969 or register by fax at 913/864-5074.

Through May 11
Los Angeles County Museum of Art
An exhibition presented by the Society of Architectural Historians, *Exiles and Emigres in Los Angeles Modernist Architecture,* will feature houses designed by Paul Laszlo, R. M. Schindler, Richard Neutra, J. R. Davidson, and Jock Detlof Peters. Tours of the houses will be offered on May 3 and May 10. Contact Alison Cotter at the Society, 213/202-2236.

May 16-18
Ernest N. Morial Convention Center
New Orleans
The annual AIA National Convention and Expo is expected to draw over 10,000 architects, and allied design and construction professionals to seminars, business sessions, and exhibits. More than 400 companies will offer the latest in products. This year's theme is *Practice and Prosperity: Serving Client and Community.* Architects may earn up to 36 AIA Learning Units. For information or to register, call 617/859-4475.

May 20-July 8
College of Engineering
University of Wisconsin, Madison
The university offers a course in intermediate lighting design from 8:00 a.m. to 10:00 a.m. on Tuesdays via WisView, the University's computer-based audiographics teleconferencing system. Participants completing the course should be prepared to take the Technical Knowledge Exam of the Illuminating Engineering Society of North America. Contact Katie Peterson by phone at 800/462-0876 or E-mail at cust-serv@epd.engr.wisc.edu.

June 1-3
Lingotto Conference Centre
Turin, Italy
The International Facility Management Association will hold its annual meeting. The keynote address will be given by Renzo Piano. Topics will include building systems, the environment, global business strategies, technology, and health, safety, and risk management. The association is currently seeking speaking proposals for its Asian Conference to be held in Hong Kong in November. For information phone Gina van Dijk, IFMA European Bureau, Brussels, 32-2-743-1542 (fax 32-2-743-1550 or E-mail 100332.670@compuserve.com).

June 5-8
Downtown DoubleTree Hotel
Tulsa, Oklahoma
The AIA Committee on Design will meet to explore the effects of heavy private support for good design in this city, including that of F. L. Wright and Bruce Goff. Call 800/242-3837.

Competitions

First annual **Business Week/Architectural Record Awards,** sponsored by the AIA, will recognize achievement in creative management practices and design solutions. The deadline for registration is March 17, and for entries, April 18. Categories include design that supports alternative work practices and increased productivity; design that boosts a new corporate image or changing (*continued on page 160*)

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CIRCLE 188 ON INQUIRY CARD

(*continued from page 158*) corporate culture; and design that supports corporate or institutional innovation, industrial practices, and new work tools. Winners will be featured in both publications. *Business Week* is read by some six million people, many of them potential clients. To enter, call 888/242-4240 or visit the Web site at www.aia.org. Entries will be received at the AIA in Washington, D. C.

Forbo Industries is sponsoring an international design competition for architects, designers, and students to design furniture or objects that predominately use desk-top linoleum. Winning designs will be exhibited at the Arbitare Il Tempo Furniture Show in Verona, Italy, and the designers will receive an expense-paid round trip. The first-prize winner will also receive ECU 5,000 or approximately $6,000. The deadline is April 15. Entry packets and information can be obtained by calling 800/233-0475.

AIA/Portland has issued a call for entries in its awards program, **Architecture + Energy: Building Excellence in the Northwest**. Recognition will be given for design excellence in buildings that integrate energy-efficient technology. The program is open to non-residential buildings in Idaho, Montana, Oregon, and Washington State. Sponsors are Portland General Electric and the Bonneville Power Administration. The deadline is May 30. To request an entry packet, contact AIA/Portland, 315 S.W. Fourth Avenue, Portland, Oregon 97204 or call 503/223-8757.

Entries for the 1997 **DuPont Benedictus Awards** for Innovation in Architectural Laminated Glass are due March 3. The competition is sponsored by DuPont, the AIA, and the Association of Collegiate Schools of Architecture, and is supported by the International Union of Architects. This year's jury is comprised of Hugh Newell Jacobson, FAIA; Patricia Patkau, RAIC; and Christian de Portzamparc. Winners from around the world who demonstrate "significant" uses of laminated glass will be announced at the AIA Convention in New Orleans, May 16-18. For information, write Joanna Hanes-Lahr, 1100 New York Avenue, N.W., Washington, D.C. 20005; call 202/393-5247; or E-mail to hanes-lahr@mcimail.com.

The Village of Plainfield, Illinois together with Plainfield Partners Commercial, Ltd., and the township Park District are holding a one-stage competition for the design of a new 300-acre **Plainfield Town Center** to be located directly across the DuPage River from the historic downtown. Registration costs $90 and closes March 30. Entries are due May 1. Prizes are $10,000, first; $5,000, second; and $2,500, third. To register, send check or money order to Plainfield Design Competition, Village of Plainfield, 32145 West Lincoln Highway, Plainfield, Illinois 60544. For information, call 815/436-7093.

Entries are due on April 1 in the one-stage International Design Competition for the **Development of David's Island**, located in Long Island Sound. The sponsor is the College of New Rochelle. Registration before January 15 costs $35, and $50 thereafter. Jurors include Diana Agrest, Diana Balmori, Deborah Dietsch, Laurie Hawkinson, Michael Manfredi, and Bradford Perkins. Prizes totaling $5,000 will be distributed among the winners, whose entries will be exhibited at the New Rochelle Castle Gallery. For a competition brief, call the gallery at 914/654-5423.

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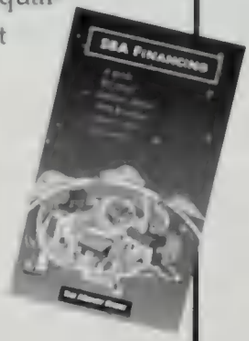
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Reviews

The Green Imperative, *by Victor Papanek. New York: Thames & Hudson, 1995, 256 pages, $20 (paper).*

Tomorrow By Design, *by Philip H. Lewis, Jr. New York: Wiley, 1996, 258 pages, $55.*

Towards a Sustainable Architecture, *by Brian Edwards. London: Butterworth, 1996, 220 pages, $48 (paper).*

Reviewed by Susan Massey

With so much talk about "green" or sustainable design, it's not surprising that an entire genre of architecture books has developed to meet demand. The three books reviewed here take different approaches to the subject, but each makes its own contribution to a body of research.

The Green Imperative is an eclectic review of environmental issues, starting with a scientific look into the volatility of nature and including an examination of the effect that unsustainable materials, production, and design have on our world. Papanek also addresses esthetics, criticizing the design of nonsustainable products as "self-indulgent." Written more for a general readership, this book urges consumers to buy green.

Tomorrow By Design is a proposal for sustainable land use, arguing that economic growth can be coupled with ecologically friendly planning. Geared toward designers and planners, this book includes case studies from projects in Alaska, the Great Lakes basin, and the Mississippi Valley.

Towards A Sustainable Architecture, the most technical of the three books, is an intense synthesis of architecture, engineering, and urban planning. A response to the European union's call for "sustainable and non-inflationary growth respecting the environment," the book focuses on European conditions and case studies.

Construction Failure, *Second Edition by Jacob Feld and Kenneth L. Carper. New York: Wiley, 1997, 512 pages, $70.*

Originally published in 1968, this book was the first of a series of guides to identifying potential construction hazards. The authors use case studies, along with illustrations and photographs, to examine causes and costs of both structural and non-structural failures. The new edition is updated to reflect industry developments and is enhanced by a new chapter on the responsibilities for failure and construction litigation.

Transit Villages in the 21st Century, *by Michael Bernick and Robert Cervero. New York: McGraw-Hill, 1997, 387 pages, $43.*

In a time of urban sprawl and dependence on the automobile, this book proposes a different kind of development—based on mass-transit nodes and encouraging greater pedestrian activity. The authors, two transportation advisors, support case studies with maps, drawings, and statistics.

Dictionary of Building Preservation, *edited by Ward Bucher. New York: Wiley, 1996, 560 pages, $40.*

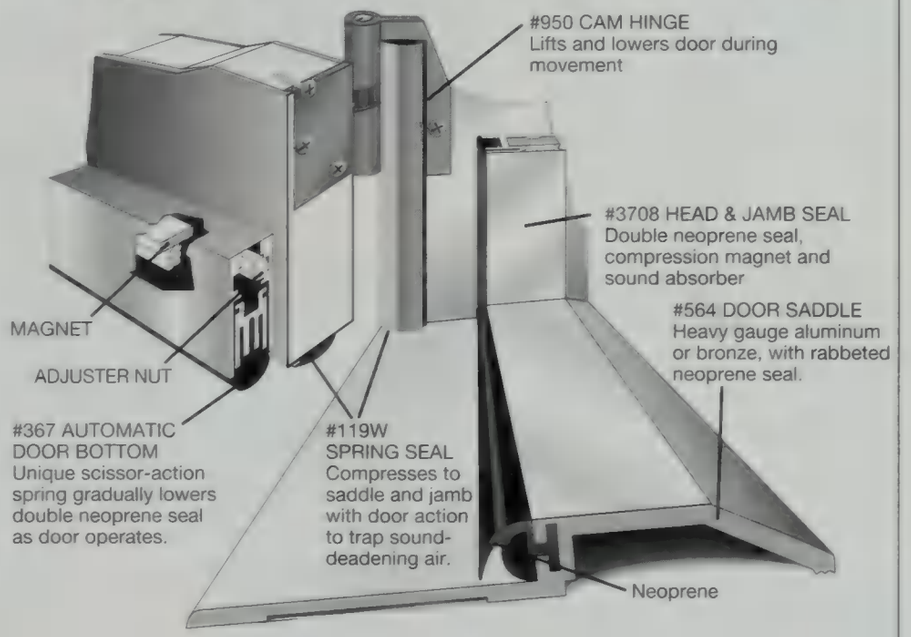
A substantial reference, this specialized dictionary demystifies the terminology of building preservation with straightforward definitions, illustrations, word origins, and cross referencing.

Susan Massey is a student at the University of Virginia.

Omissions and Corrections

The editorial index [RECORD, December 1996, page 135] should have included Marmol & Radziner Architecture in credits for Taper Center.

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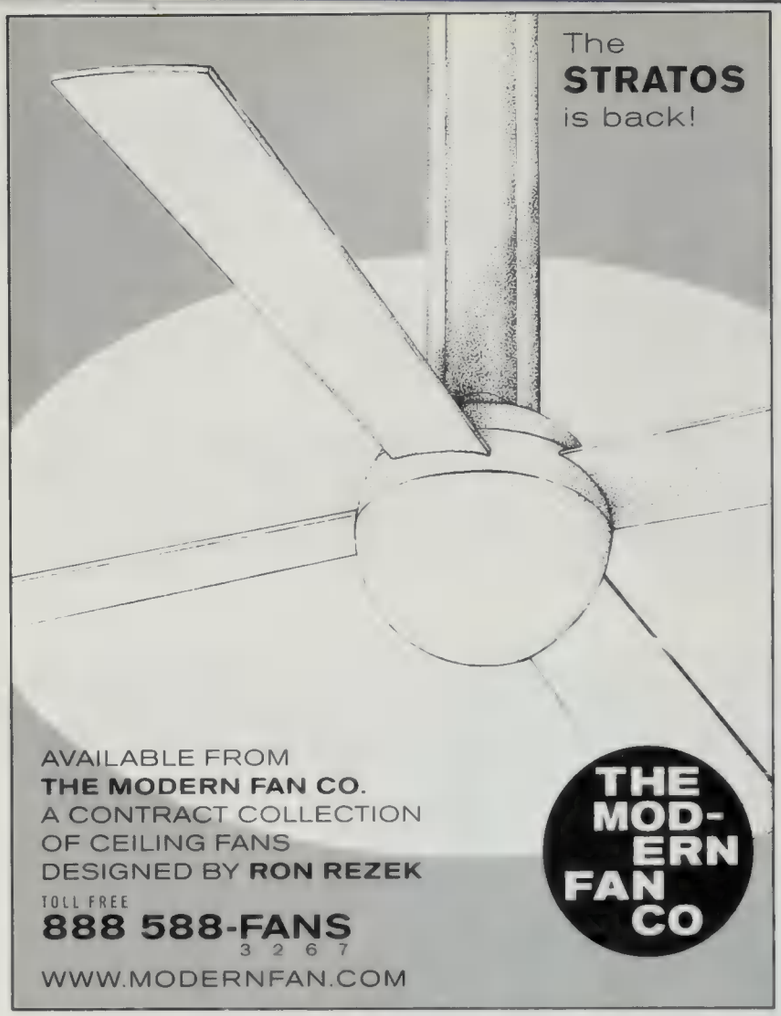
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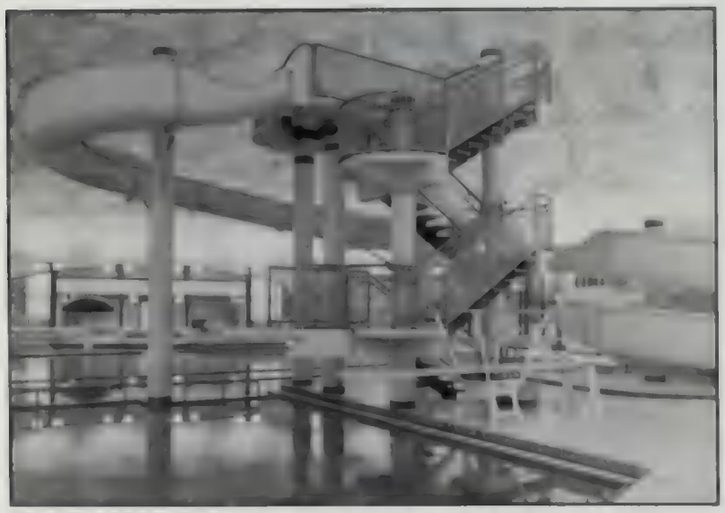
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(*Letters, continued from page 14*)
this endeavor, you help us create a better world for ourselves. It's a great new direction and I am looking forward to each new issue.
Harold LaDue
LaDue Design
New York City

Congratulations on the new ARCHITECTURAL RECORD and the focus outlined in its editorial.

I especially want to applaud the project descriptions, in which the client's requirements are included along with the what, how, and why of the architect's response. Too often in architectural magazines, project descriptions contain only graphics and descriptions of the building's design solution, without explaining how well it meets the needs of the program. As practitioners of *the responsive art*, architects have a responsibility to provide answers to both functional and esthetic requirements. And magazines have a responsibility to cover both aspects.
Keep up the good work.
David R. Dibner, FAIA
McLean, Va.

Expanding on Mentors

Reading the "Tales of Two Architects" in your January issue [page 30], I was struck with how information developed in the past gets lost. The intern working on CAD and seemingly "stuck" is not stuck at all, just not imaginative. He has a third option [in addition to the two offered by Kate Schwennsen]: do the learning on his own time. It's his career, his knowledge, so he must get it on his own. I suspect his employer will help such an effort if presented with the intern's goals.

I presented this approach to an intern here in New Mexico who was not getting any structural or estimating experience. As his professional advisor, I advised him to do what I did as an intern, and do "parallel" engineering. That is, getting the engineer's instructions for doing a design at home in tandem with the engineer's. The same can be done on cost estimating or most other office functions.

As an intern myself, I went out on construction projects after working hours and noted what I saw and questions I would ask. After doing this for a while, my employers took me seriously, and let me go on site visits with them. All employers are faced with the profit motive. But if interns give personal time to further their careers, employers will help.

The reason I say that information gets lost is that my efforts as a mentor were described in the *Intern* published by the AIA years ago. The information is still valid.

I have not read all your magazine yet, but I like what my preliminary review revealed.
Charles E. Nolan, Jr., AIA
Nolan & Associates
Las Cruces, N. M.

Fire safety questioned

In an article published in the January issue on handicapped accessibility [pages 116-121], you printed a picture on the last page of a recycling-access door connecting a kitchen directly to a garage. It has been my experience that a one-hour fire separation is required between garages and living spaces. Why would an exception be granted in this particular situation?
Donald J. Weaks
Cincinnati, Ohio

Architect Nick Winton replies:
You are right about your experience. The access door in question is a one-hour-rated door just like a normal door between a garage and living spaces.

Bad will in Peru in perspective

The negative criticism of the new U.S. Embassy in Lima, Peru, by Cynthia Richardson [RECORD, December 1996, page 145] and Rudy Schwarz [January 1997, page 16] suggests neither of these individuals is literate regarding events and conditions in that country. I'm referring of course not only to the

(*continued on page 165*)

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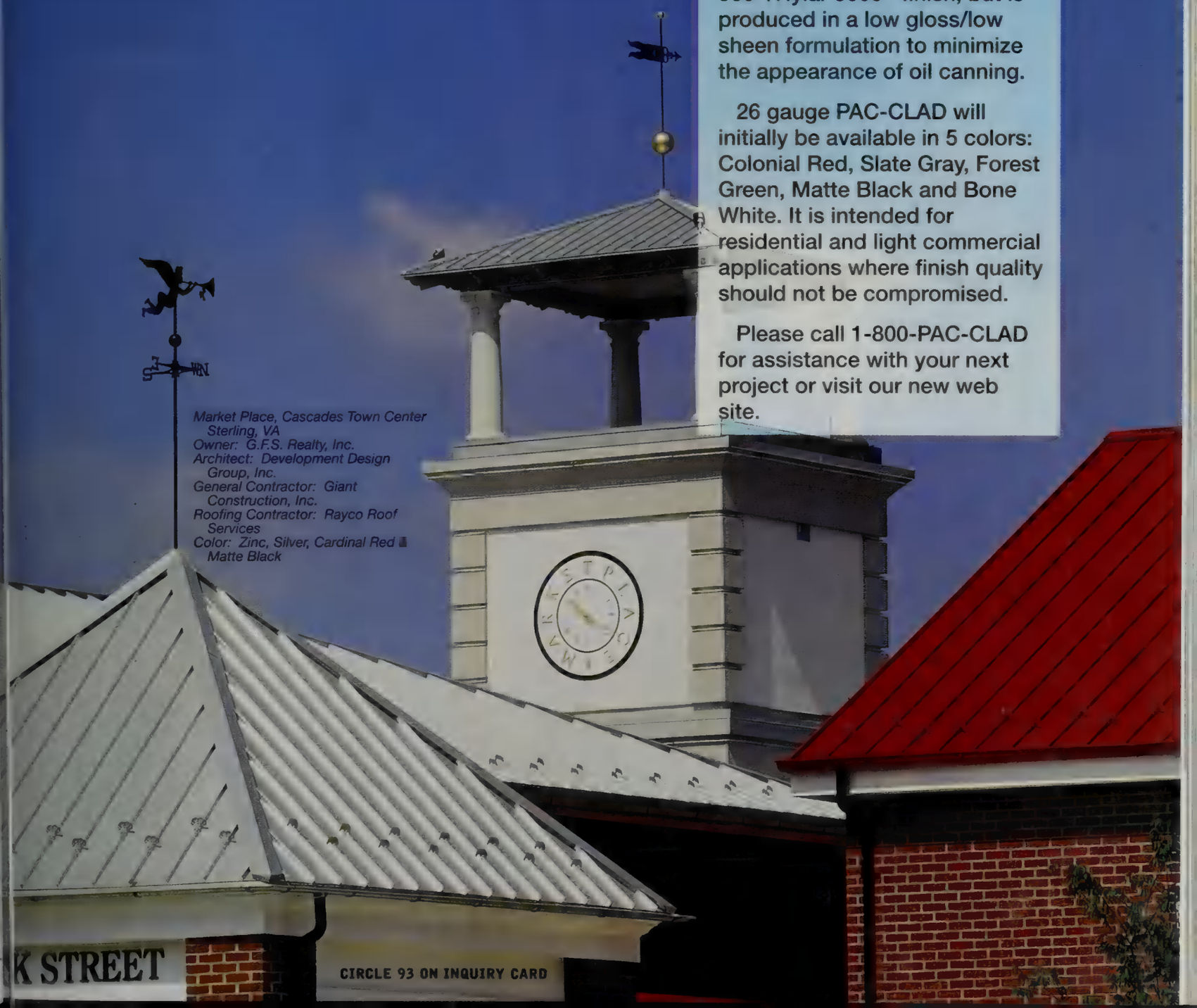
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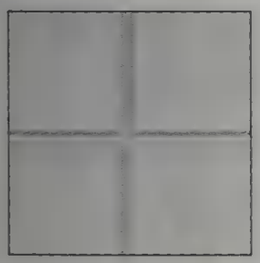
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(*Letters, continued from page 162*)

ongoing hostage crisis in Lima, but also to the kidnappings, assassinations, and robberies, which have made routine use of bodyguards and bulletproof vehicles the norm by even mid-level corporate and government personnel. The new U. S. Embassy is a very satisfactory compromise between esthetics, functionality, and the level of security required by conditions in that country.

I'm sure any American official serving a tour of duty there will be more gratified by the high level of security the new facility provides than concerned about any perceived lack of esthetic value.

William Bailey
Oakton, Va.

More Boldness Gap Comments

In response to Robert Campbell's essay in the November 1996 issue of ARCHITECTURAL RECORD [pages 76-79] on the state of architecture in America, I offer the following comments and observations:

America has become a society without a collective vision of the future and, without it, we live in memories of the past. Imagining the future requires taking risks and leaving the comfort of the present and known. The risks appear too great and we play it safe.

We have become a society of debtors whose individualism, wealth, and status is most important. We have stopped being a civil society. We have stopped being civil to each other. We no longer see public architecture as important and as a continuing and necessary symbolic inspiration for the future.

Architecture has become an object to consume and brand-name architects, a status symbol. Facility managers, building committees, and competitions are not willing to take risks on "unknown" architects.

In a society of consumers, the shopping mall has replaced the main street and the theme park has replaced distant cities and lands to explore and enjoy. Housing has become an object of investment to protect rather than shelter to enjoy or celebrate. Civic architecture is replaced by developer architecture.

Our time has come and gone. Europe is in the midst of a renaissance 200 years or so after its zenith as the center of world economic power. Our time was the 19th and 20th century. The Far East is in its ascension and may be the center for the 21st century. Hopefully our time will come again.

Peter VanDine, principal
Pier Five
San Francisco

Architects beware. Our recent visions have included:

a. Public housing projects that failed miserably.

b. "Mega-structures" and controlled-environment domed cities, that thankfully were never realized.

c. High-rise urban centers that require Herculean infrastructures and generate monumental pollution.

d. Suburban sprawls that isolate their denizens.

e. "Post-modernism" and "deconstruction" that celebrate nightmares rather than dreams.

Architecture reflects the wishes/needs of those who commission it. Our architecture today is overwhelmed by their technology, economics, and politics, and our nation's architecture reflects that. I find "boldness" an unfortunate, expedient substitute for art in architecture. If you would change America's architecture, first you must change America.

Robert M. Axt
Axt Mitchell Architects
Ukiah, Calif.

RECORD may edit letters for grammar, style, and space availability, taking care not to change the author's meaning.

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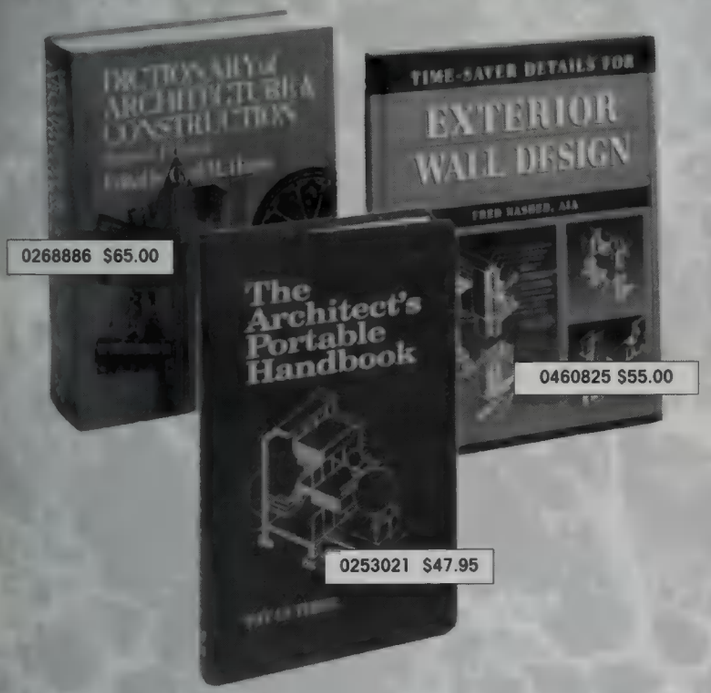
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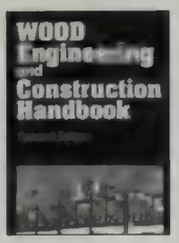
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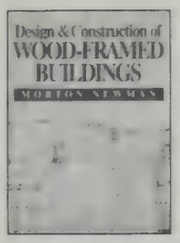
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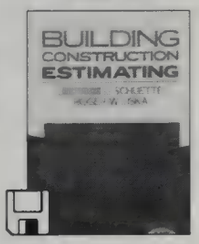


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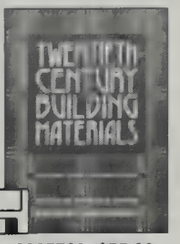

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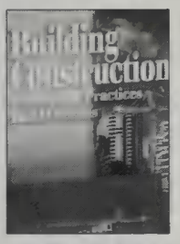


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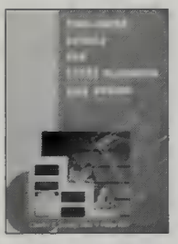


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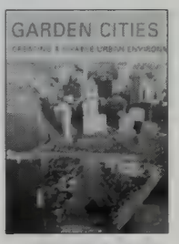


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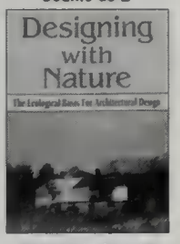

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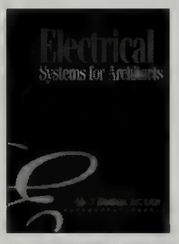
587296X-XX $42.95
Counts as 2



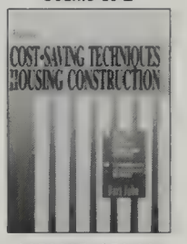
0576203 $42.00



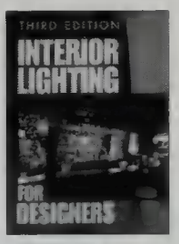
0723176 $34.95



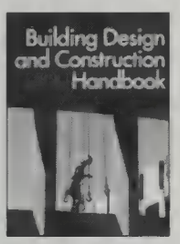
0150788-XX $49.00
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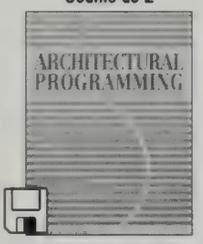
0052085 $50.00



586908X $59.95



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0359725 $44.00



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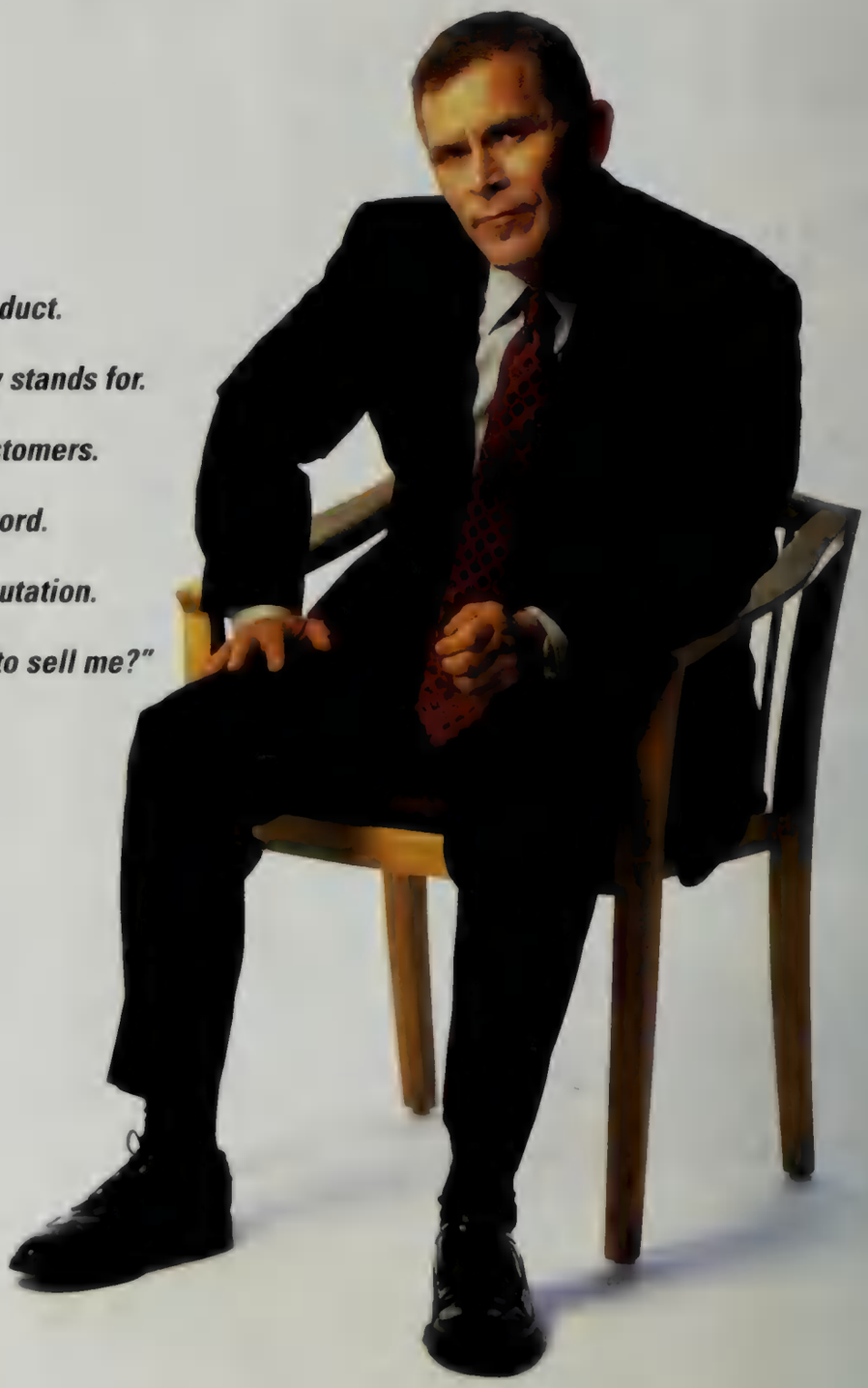
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I don't know your company's customers.

I don't know your company's record.

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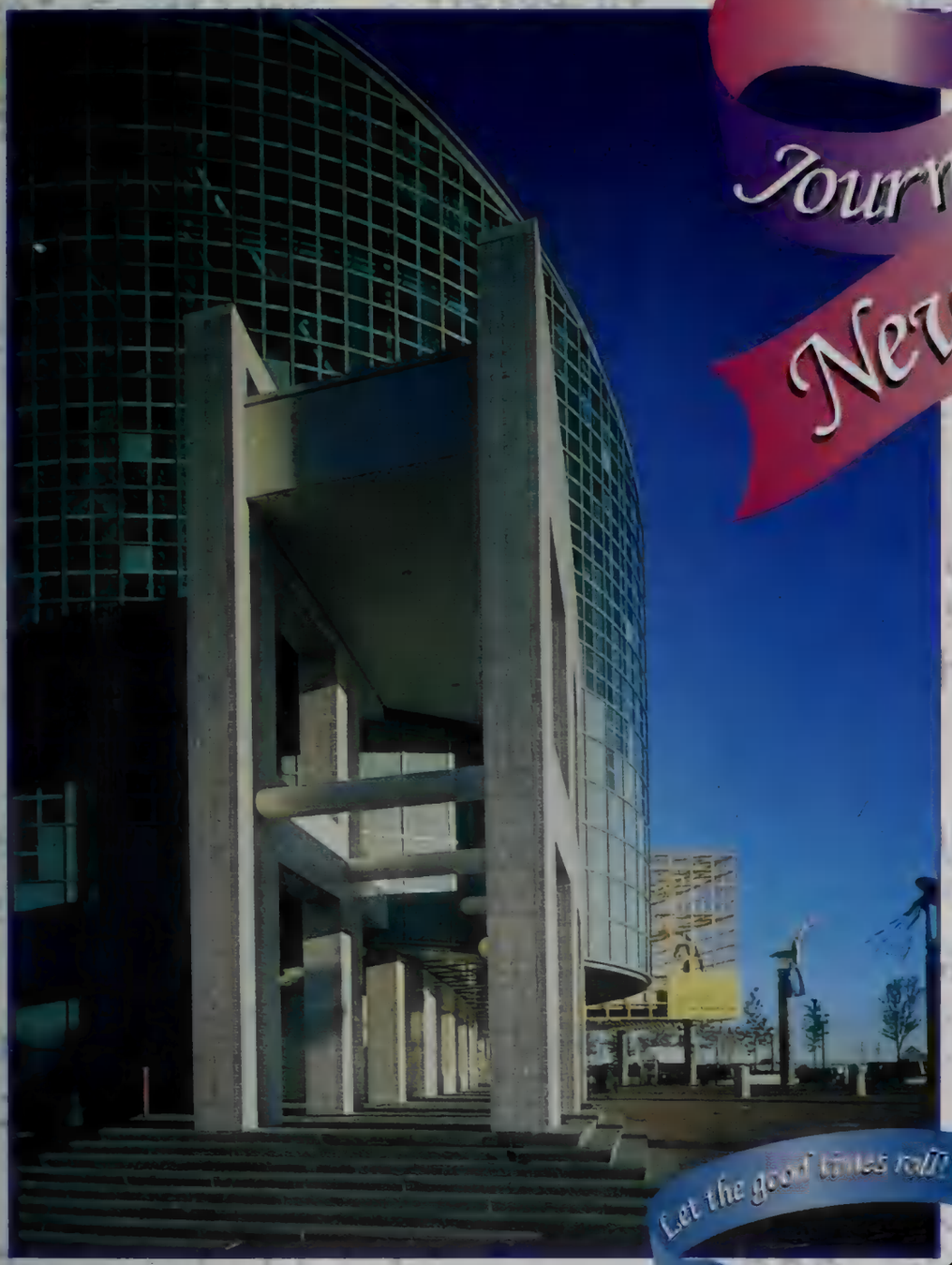


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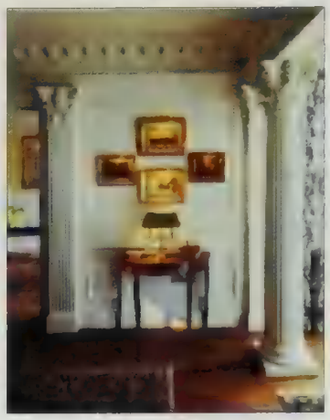
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Openings

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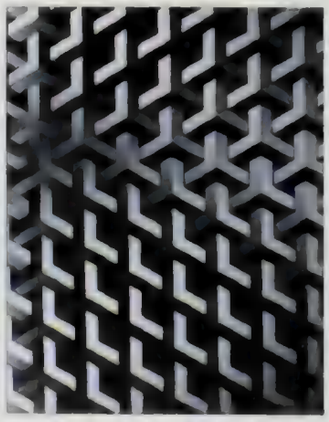


Applied as a slurry coating Xypex is a chemical treatment that waterproofs by penetrating the concrete with a crystalline formation that "plugs" the pores of the structure preventing water seepage. Xypex is ideal for use on the "inside" of wet underground structures.

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Surface Design

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12 New Products Featured in 1997 Catalog



12 new products are introduced in Strong-Tie's 97 catalog, Wood Construction Connectors A necessary reference for structural engineers, building officials, and architects it includes updated specs, load charts, application drawings, & building code acceptance - plus info on holdown anchorage design, & available custom hanger options. ISO9001 Reg. For 1997 catalog (C-97), write POB 10789, Pleasanton, CA 94588

Simpson Strong-Tie

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Heat-N-Glo

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The Mortar Net™

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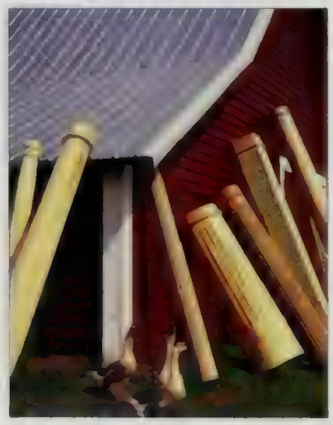


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Eliason Corporation

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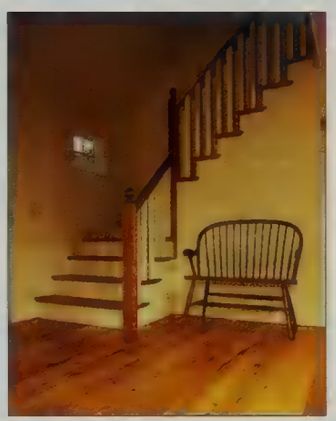


Pemko Mfg. Co. introduces FireGlaze™ (FG3000), a specially formulated high performance glazing compound. This revolutionary product allows for the use of much larger vision lites, side lites, borrowed lites, and glass transoms in 20, 45 and 90 minute doors and screens. The "wall of glass" pictured here passed a 45 minute fire test! Expand your vision.

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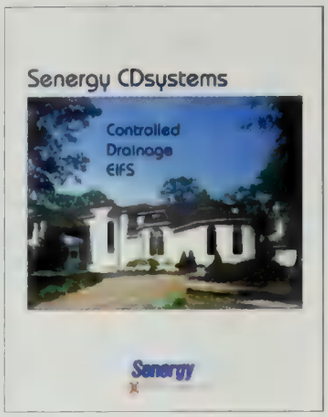


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Omega Fence Systems

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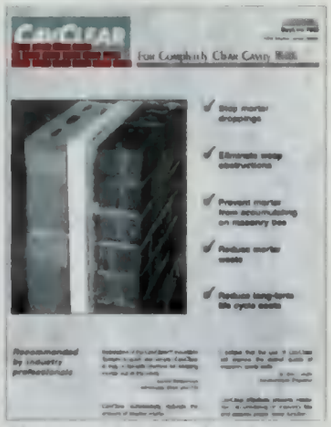


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INSTRUCTIONS:

Read the article, "Prudential Healthcare: An Office Lighting Case Study" (ARCHITECTURAL RECORD, February, 1997, pages 154-157).

Use the learning objectives to focus your study.

- Complete the questions below, then check your answers (page 185).
- Fill out the self-report form and submit it to receive two AIA Learning Units (page 188).

—Mark Scher, AIA Director of Continuing Education Programs and Products

Questions:

1. What are two sources of workstation lighting problems affecting computer screens and how were they ameliorated in the Prudential building?

Answer 1.

2. How were open-plan workstations lighted and what non-lighting factors were found to influence worker perceptions concerning the amount of light in the office?

Answer 2.

3. What standard for office lighting was followed in the DELTA case study and list two specifications that follow the guidelines?

Answer 3.

4. Describe three examples of energy efficient techniques in the case study and any associated advantages or disadvantages that were identified.

Answer 4.

5. Where and to what extent does outside light pose illumination problems in this facility?

Answer 5.

6. How efficient are the lighting approaches used in the Prudential HealthCare building, in terms of energy, environmental conservation, and cost savings?

Answer 6.

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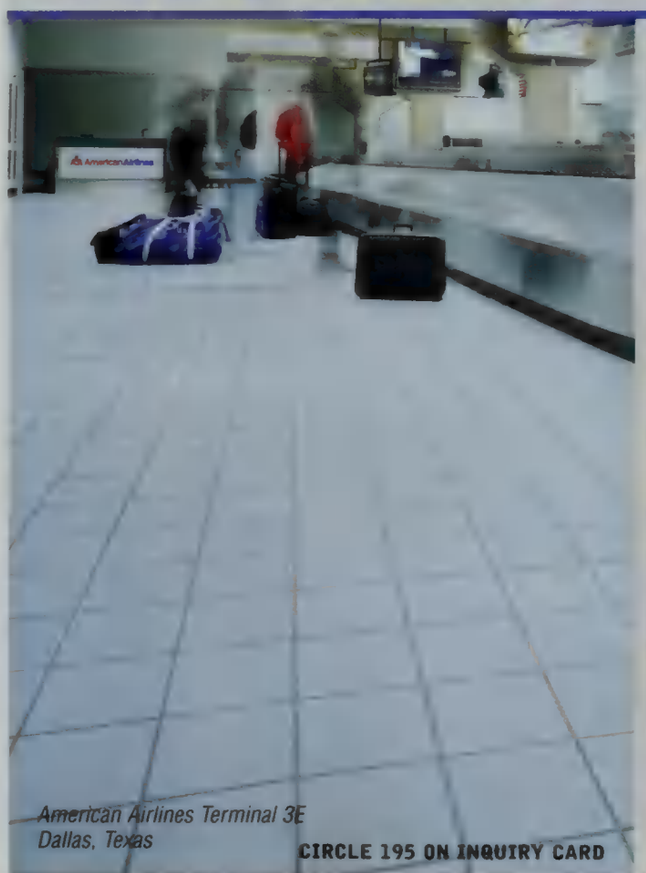
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Submissions should be mailed to: KAREN D. STEIN ◆ RECORD INTERIORS ◆ ARCHITECTURAL RECORD
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CIRCLE 196 ON INQUIRY CARD

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

ANSWERS:

Answers refer to the article "Prudential Healthcare: An Office Lighting Case Study" (ARCHITECTURAL RECORD, February,1997, pages 154-157), and to questions on page 183.

Fill out the self-report form and submit it to receive two AIA Learning Units (page 188).

3. The standard is known as the RP-1 from the Illuminating Engineering Society of North America. The article mentions a 4:1 uniformity ratio and a 3:1 ratio balancing luminances between task and immediate surroundings.

4a. Time clocks provide a flexible arrangement for turning lights on for early and late shifts where daylight penetration is limited. **b.** Wall switch occupancy sensors in conference rooms. **c.** Windows are tinted to limit transmission of radiant energy.

5. Fixed VDT screens near windows are washed out during early morning and late day sun angles and require perimeter window blinds. The Cornerstone multipurpose room requires black-out blinds to handle the approximately 150fc of light added by afternoon sun.

6. So far, the building has saved $41,456 annually in electricity. The $8 per sq ft cost of lighting is comparable to other installations using the same lighting approaches. The building reduced energy consumption will significantly lower power plant emissions of CO_2 and SO_2.

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AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS:

- Read the article, "Restoring Wright's Wingspread" (pages 80-83), using the learning objectives provided to focus your study.
- Complete the questions below, then check your answers (page 188).
- Fill out the self-report form and submit it to receive two AIA Learning Units (page 188).

—*Mark Scher, AIA Director of Continuing Education Programs and Products*

Questions:

1. How may modernization have exacerbated the eventual skylight problems at Wingspread?

Answer 1.

2. What preservation strategy was behind the decision to "work from the outside in?"

Answer 2.

3. What considerations and resulting project priorities came from using the United Nations World Heritage Site Evaluation System?

Answer 3.

4. Describe three materials-related innovations.

Answer 4.

5. What is a possible problem with the "boat builder" technical solution?

Answer 5.

6. Roofing design presents complex problems. Why did Frank Lloyd Wright refer to his roofing design as a "wigwam" and what was the load bearing problem determined by a 3D finite computer analysis?

Answer 6.



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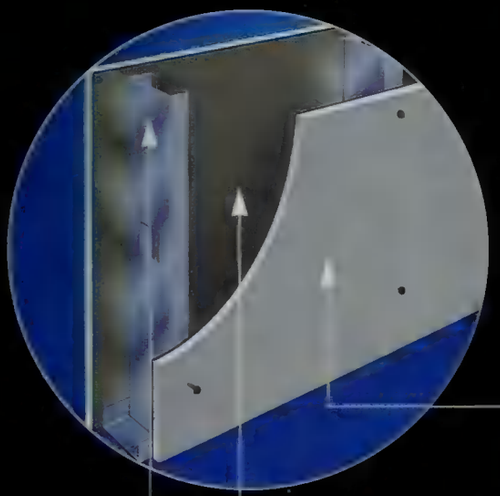
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ANSWERS:

◆ Answers refer to the article, "Restoring Wright's Wingspread" (pages 80-83) and to questions on page 186.

◆ To receive CES Credits, fill in Self-Report Form below.

1. A recent glazing retrofit reduced heat loss through the skylights and resulted in snow and ice accumulation on the skylight, which pulled supporting 2 x 4s apart.

2. A local firm proposed tearing out the interior plaster and woodwork. Instead, the Hillier Group suggested sacrificing the newer clay roofing tiles and concealed roof sheathing on the outside, to preserve the original historic interior finishes.

3. The United Nations World Heritage Site Evaluation System compares preservation economics, current values, and historic values. The four priorities were to maintain the facility as a conference center, ensure staff and user safety, protect the historic structure, fabric, and design intent, and maximize the efficient use of energy and Johnson Foundation resources.

4a. A high-strength aluminum alloy used in the aircraft industry was rough cut in a zigzag shape and modified with carpenter tools at the site to replace Frank Lloyd Wright's two inch zigzag framing. This entailed careful detailing including mock-ups, step-by-step removal instructions for existing zigzag beams, specification of tools to use, and triple checking architect supervision. **b.** Carbon-reinforced fiberglass was fashioned by boat builders to stiffen the falling lower roof. This work was tested on a smaller section of roof. Moisture monitoring was instituted. **c.** The impermeability of the fiberglass shell made nailing roof tiles difficult. An earthquake-resistant strap-tie technology, common to California but unusual in Wisconsin, was used to minimize nailing.

5. The fiberglass shell raised questions about the danger of moisture because, in effect, a vapor barrier was bonded to the roof structure.

6. The wigwam metaphor refers to sticks supporting a membrane, i.e., wood framing reinforcing wood sheathing. The problem was in the shallow slope of the lower roof creating an unexpected thrust on the brick piers, making them tilt out of plumb. The solution was to add more support at the base of the skylight.

AIA/CES SELF-REPORT FORM

(Use to report learning units earned for Architectural Record only)

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Last Name **First Name** **Middle Initial or Name**

AIA ID Number

Program/project title: Architectural Record (03.97)
Check the following as applicable.

☐ **"Repairing Wright's Wingspread", (pages 80-83)**
☐ **"Prudential Healthcare: An Office Lighting Case Study" (ARCHITECTURAL RECORD, 02.97, pages 154-157)**

Completion date (M/D/Y): _____ / _____ / _____

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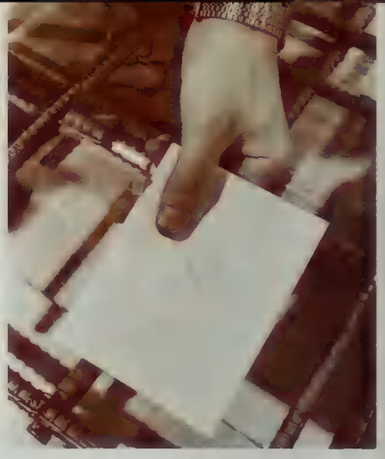
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CIRCLE 199 ON INQUIRY CARD

THE FUTURE:

Next Century's Structural Sensors: Light-Reflecting Fiber Optics

BY JOAN BLATTERMAN



If only walls could talk. They might be able to warn of microscopic stresses and fractures in structural steel caused by earthquakes. They could provide an accurate evaluation of the integrity of welds and other connections without any need to dismantle the building.

If bridge beams could talk, they could warn if rust, ever-so-slowly, has weakened the strength of spans or reduced the reinforcement provided by metal rebar, before deck sections gave way and plunged cars and trucks into rivers. And after a major fire has destroyed the contents of floors in a high rise without producing visible structural damage, we could find out if the buildings were safe to reoccupy by asking the columns.

A brand-new fiber-optic technology soon may let us "listen" to walls for real. Like the monitors in an intensive-care ward, hidden sensors will transmit a constantly changing picture of the structural health of construction, whether bridge or skyscraper.

Currently, these unseen weaknesses and hazards are monitored, after a fashion, by strain gauges linked by cables that relay the behavior to a central computer. But placing the sensing devices—strain gauges, accelerometers, and tilt meters—is difficult. The wires that connect each measuring point have to be hung from the structure, often at great height in extremely hard-to-reach areas. The data transmitted over these connections can be disrupted by electrical interference or weather-related static. As a result, much information

bridges and other critical elements is being done strictly by eyeball.

To improve on this process, structural monitoring is being simplified to eliminate some of the hazards, using systems developed by engineering research laboratories such as the Federal Highway Administration's Turner-Fairbanks Research Center in McLean, Virginia. The current state-of-the-art is a "wireless" bridge inspection technology. While individual sensors still have to be placed in proximity to vital connection points and load-bearing members, they only have to be linked to ruggedized, miniature computers placed nearby. These discrete processing points collect stress information and other critical data and transmit it through the air to a single central computer in a protected, accessible spot on or near the monitored structure. This single unit can analyze the structural-change data from the entire bridge or building, perhaps using proprietary bridge-management or other structural diagnostic software, and can transmit data on command to a remote receiving unit miles away. No more stringing cables like Christmas lights from 350-ft-high arches.

But even this advanced sensing technology keeps the functions of data collection and data transmission separate—and someone still has to climb way up there and install all those gauges.

Next century's sensors?

Almost leapfrogging today's advanced "semi-wireless" monitoring and diagnostic technology is an elegant system that combines sensor and data transmission in a single strip of fiber-optic tape. This new "hands off" structural sensing technology is now being implemented by a team at New Mexico State University in Las Cruces, led by Rola Idriss, associate professor of civil engineering. The technique of making the fiber-optic sensors themselves was invented by engineers at the Optical Science Division of the Naval Research Laboratory in Washington, D.C.

The technology, still experimental, is based on the internal light-reflecting characteristics of fiber-optic material, and it puts a sensing device directly within a continuous fiber-optic strand. To create these integral gauges, photosensitive strands are etched with a laser to microscopically alter their light-reflecting properties in selected locations, corresponding with predetermined monitoring spots in the completed structure. This "etching" is the sensor: as minute changes in the beam, deck, or weld occur, the movement will stretch and strain the fiber strands at the site. When a beam of light is introduced through an access port into the fiberoptic strand, light will reflect at a different wave length at that specific place on the strand.

(*Engineering News-Record* thought the fiber-optic sensing technology exciting enough to cite the Idriss team as one of 1996's top newsmakers.)

The full-scale test of this monitoring technology, to be performed with funding allocated by the Federal Highway Administration, will generate real-time data on a busy bridge that carries federal Route 10 over University Avenue in Las Cruces. The fiber-optic tapes, with sensing spots pre-etched where desired, will be tied to the rebar before the concrete of a new, 100-ft-long section of bridge deck is poured. After the structure is complete, the strands will be constantly monitored. A remote computer, accessed via cell phone, will pinpoint the site of any movement and the nature of the stress (seismic, live loading, thermal movement, etc.). When current data are compared to the original (as built) sequence, loading changes and possible damage can be identified. To establish a baseline control, this full-scale test will be run in tandem with the current monitoring technology using strain gauges and wireless transponders as described above.

The beauty of this fiber-optic status monitoring is that the tapes can be placed deep within the structure, close to critical beams, connections, welds, or reinforcement. It could constantly report and evaluate real-time data on the safety and structural integrity of the building or bridge. Protected by concrete or nestled under fireproofing, the tapes will remain in place, safe from weather, vandals, or other damage, ready to warn of imminent danger. The system may help engineers pinpoint the exact spot where repair is needed—in time to prevent tragedy. ■

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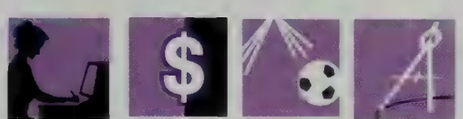
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Above: *Canova Museum, Possagno, Italy; remodeled in the 1950's by Carlo Scarpa. Photo: © Richard Bryant/ARCAID*

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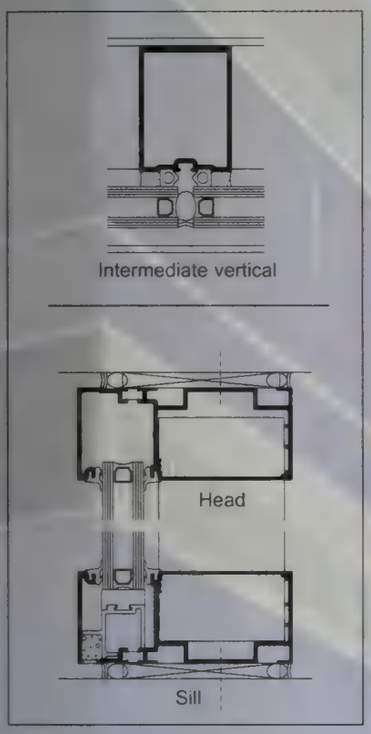
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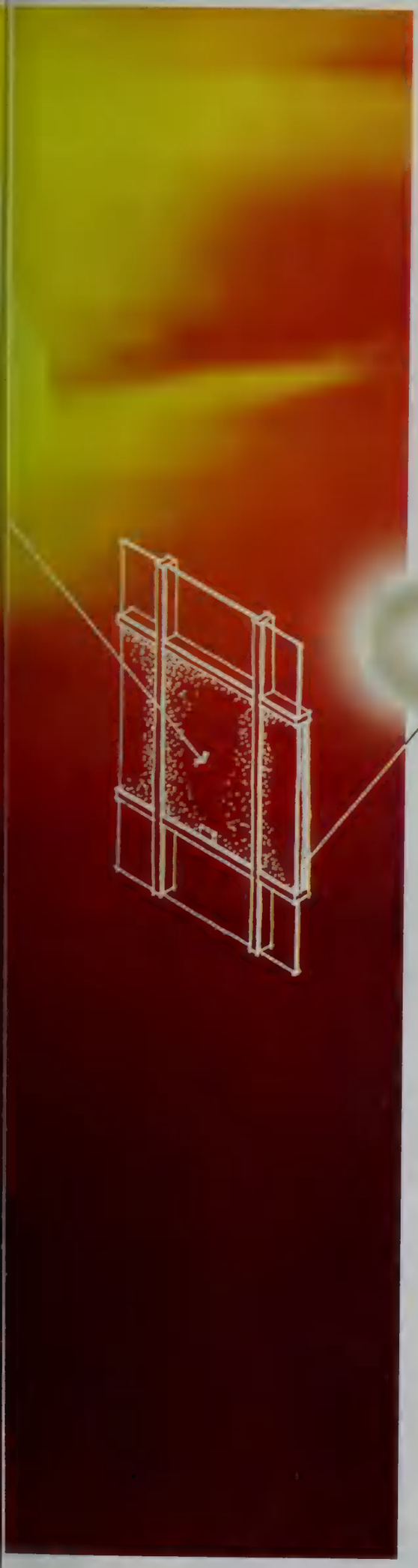
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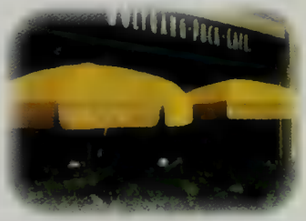


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EDITORIAL:
Seeking Architectural Balance

BY ROBERT A. IVY, FAIA

A physician friend, who operates on the human retina with pinpoint laser beams, recently built a soaking tub for his home canopied by an indirectly lit, Tiepolo-like cloud bank. Another acquaintance, bombarded day and night by computer-screen pixels, recently constructed a "meditative chamber," a tall, dark void with a single cushion and textured walls, where she exchanges ohms for contemplative "ommms."

Both Yuppies, these '60s alumni sought balance in their personal lives, in the very fabric of their houses, from a world reeling with overstimulation. Futurist John Naisbett, writing almost 20 years ago, described the complementary relationship as "High Tech/High Touch." The further we veer toward rationalized high technology, Naisbett argued, the greater the need for humanizing counterbalance—a bit of yin for your yang. Contemporary architecture seems to be bearing him out.

While shelter books in the consumer press bulge to the breaking point with chintzes and faux bois, this magazine is recording a countervailing trend toward simplicity. It is as if a certain segment of society, hot-wired to the smoking-point during the day, seeks serenity in the muffled echoes of Modernism, freed from its dogma and floating above a European-derived polemic. Modernism with a little "m".

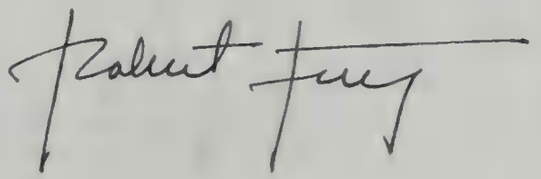
Some have labeled this trend as minimalism, but the truth is, categorizing the work misses the point. Like the Modernists, this contemporary work is often enriched by a concern for human experience of the inhabitants as well as the larger social milieu. However, for every Modernist rule adhered to, there is an exception among the new practitioners, a neo-Baroque flourish in a curving wall, an anomaly. The glue that unites the group is more spatial than formal, an interplay of interior and exterior voids that binds the architecture to time and place, sometimes extending into and embracing the whole landscape.

Like the Shakers who preceded them, these designers place emphasis on craft, scrutinizing the joint where wall meets floor or arm joins chair-back. Their work is evident in the small, busy shops in San Francisco or Santa Fe or SoHo, where wrought metal sconces, inlaid wood cabinets, and hand-cast glass lamps accentuate bare walls and broom-swept floors. Ironically, the hand-crafted home furnishings are often conceived by former architecture students who have chosen labor-intensive work as momentary or full-time alternative careers.

Materiality is their watchword. Schools of architecture, which serve as harbingers of renewal for the larger profession, are cluttered with highly crafted models that accentuate each building material. Whole doors, built to full scale, line the corridors, their metal surfaces burnished with swirling patterns. Meanwhile, blue-screened laptops whir atop each student's desk, bathing the hand-made models in a surreal light.

Materiality, craft, flowing space, detail. In the best hands, these simple, real-world attributes add up to soothing architecture, an antidote to excessive speed and hype, a three-dimensional canvas for semi-fractured lives. An architecture in balance.

In our own efforts to tip the editorial scales toward excellence, high craft, and detail, we welcome three additional contributing editors: David Dillon, the respected architecture critic for the DALLAS MORNING NEWS; Nancy Solomon, AIA, an experienced editor on practice and technology matters; and Paris-based Tom Vonier, AIA, who will write about the profession internationally. All three are old friends; all three write with insight and skill. Other names from other places will follow.



LETTERS



Comments from Cuba

In 1996, I met Rachel Carley during her visit to Havana researching information for a book on Cuban architecture. I helped her and reviewed her first draft. Unfortunately, I could not read the text of her article for ARCHITECTURAL RECORD before it was published in the February 1997 issue [pages 90-97].

Carley's article on Cuba's architectural heritage is well written and carries valuable information. Moreover, I would like to think that it conveys a feeling of respect, not only for the value of that built stock, but also for the skill and commitment of the Cubans involved in its preservation. In some way, it may also help in building awareness about the lack of logic in the American embargo on Cuba.

Yet, I find a strikingly different approach between her book and the article, since the latter is mostly on current Cuban politics and economy—the sort you would read in *Newsweek* rather than in RECORD. Maybe this is a subliminal homage to Karl Marx, who first pointed out that economy determines society's superstructure.

There are some quotations in Carley's article that—even if sometimes close to criticisms I have made—are presented out of context, thus introducing an unwanted distortion. The author is not to be blamed for that, since the length of an article leaves little space for a fuller discussion. Most of my criticisms [illegible] to the [illegible] model of promoting the Cuban urban environment during the [illegible] decades. [illegible] the impression [illegible] addressed to the whole of the Cuban model, and that is not true. Probably some will find it naive, but I still believe that a *sustainable socialism* can be possible just as *sustainable cities* continue to glow as a distant but always appealing goal. A 61-year-old Cuban architect may find that worth fighting for, though it can bring him some misunderstanding.

Mario Coyula
Havana, Cuba

Samitaur's place in urban renewal

We enjoyed Suzanne Stephens's review of the Samitaur Building in Los Angeles [RECORD , February, 1997, pages 53-63]. Fred and Laurie Smith, the developers, are great visionaries; their single-minded determination to redefine the Hayden Tract of Culver City deserves a mountain of praise.

The accomplishments of the Smiths, working in conjunction with the Culver City Redevelopment Agency, should serve as a paradigm for cities wishing to revitalize their centers with mixed-use projects.

Moreover, when Fred Smith says, "We couldn't get construction loans, and so we had to use our own money," he points out financial institutions' need to get on board. The Smiths should show the bean counters at banks how the numbers work. We will all be better served in the end with a higher quality of life.

Gary and Linda Citron
Pasadena, Calif.

Members of the print media seem intent on rewriting geography in southern California. An example is Suzanne Stephens in her article on Eric Owen Moss's Samitaur Building.

First of all, Culver City is not a "section" of Los Angeles. It is an independent municipality that happens to be all but surrounded by the City of Los Angeles. Second, the Samitaur Building is not located in or even close to South Central Los Angeles. South Central is several miles to the east and, no doubt, residents in neighborhoods to the immediate east of Culver City would object to the being labeled as living in South Central. More accurately, this area should be called southwest Los Angeles. Of course, all these areas are referred to by local realtors as "Beverly Hills adjacent." (I work in Culver City and live in the Baldwin Hills district of Los Angeles, immediately east of Culver City.)

Bernard Altman, AIA
Secretary, AIA/Los Angeles

The New RECORD

Congratulations on the January and February, 1997 issues of RECORD. What a breath of fresh air! I am excited! Yes, there are *other* architects in this country doing stimulating and beautiful work. I was so tired of reading only about the stars. I sincerely appreciate your articles on urban and social issues such as housing. Cabrini-Green [February, 1997, pages 84-89] is a challenge that must be documented. I pray for its success. If we cannot make our communities livable, then what is architecture about? Closely guarded, gated communities and cities that close at night do not form an acceptable world in which to design and live.

Historic preservation in Cuba [pages 90-97]! Let us touch the untouchable. Design and art is international and crosses the borders of politics.Thank you! You have restored my interest in architectural journals. I *will* subscribe to *this* kind of magazine.

Douglas Claude Rhodes, Architect
Whitefish, Mont.

I wanted to let you know how much I enjoyed the January, 1997, edition of your newly revamped magazine. It's very sharp and friendly, a nice job. I especially liked the Tipping Building and Phoenix articles. I also thoroughly enjoyed your new *Mentors* page—it's just the kind of feature that a professional magazine should run, but few do. You've made a terrific start. Keep it up.

David Crook
The Wall Street Journal
New York City

I just finished reading ARCHITECTURAL RECORD from cover to cover. I send you my sincerest congratulations! You're bringing a real breath of fresh air to our profession.

Edward C. Friedrichs, FAIA
President, Gensler
Santa Monica, Calif.

I cannot let the month slip by without telling you how much I admire the new RECORD.

Robert Geddes, FAIA
President, AIA, New York Chapter

Thank you for reporting the results of the competitions for the World War II Memorial and Greenport Waterfront [March, 1997, pages 31, 25]. For those of us interested in the springboard potentials of competitions, it would be greatly appreciated if RECORD instituted a regular column informing us of current competitions.

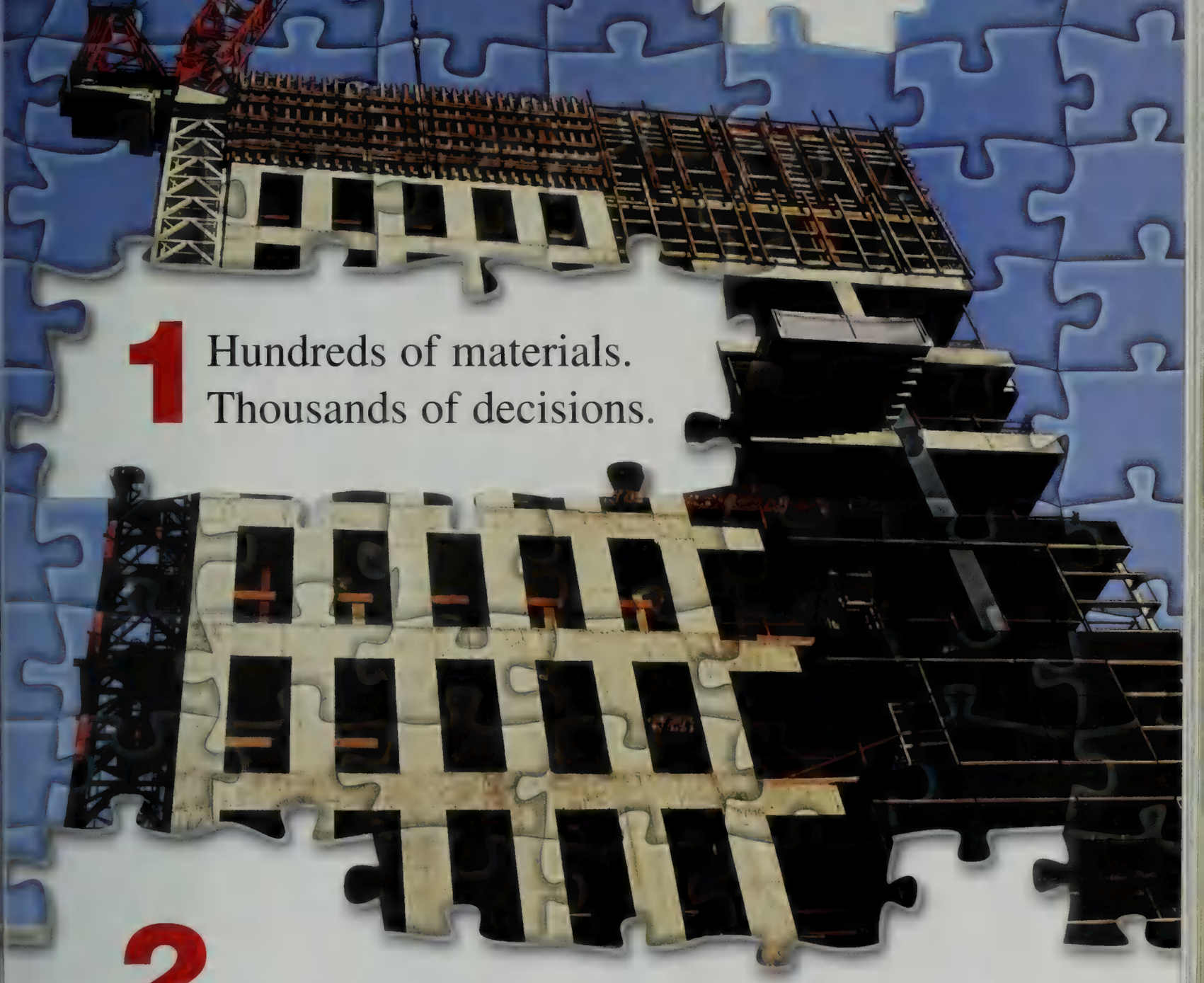
William S. Downing
Downing Barradas, Architects
Ithaca, N.Y.

Bad fad New Urbanists

The "Ahwahnee Principles" cited in the "Building Types Study 745" [January, 1997, page 132-135] are generally reasonable and desirable (though not very "new"). But the stylized "applications" in most of the published projects tend to diminish and restrict their contemporary potential, which might make them really "new."

Patterns of space and form imposed 100, 500, or 1,000 years ago have only limited relevance to contemporary needs, desires, and capabilities. These featured projects seem to be motivated either by misplaced nostalgia or by the assumption that such nostalgia is a fundamental mind-set of the "consumers" who will live in the proposals. The latter assumption probably has some validity. But stronger design leadership can demonstrate and persuade that there are better alternatives.

Other aspects of the January issue communicated much greater relevance *(continued on page 218)*



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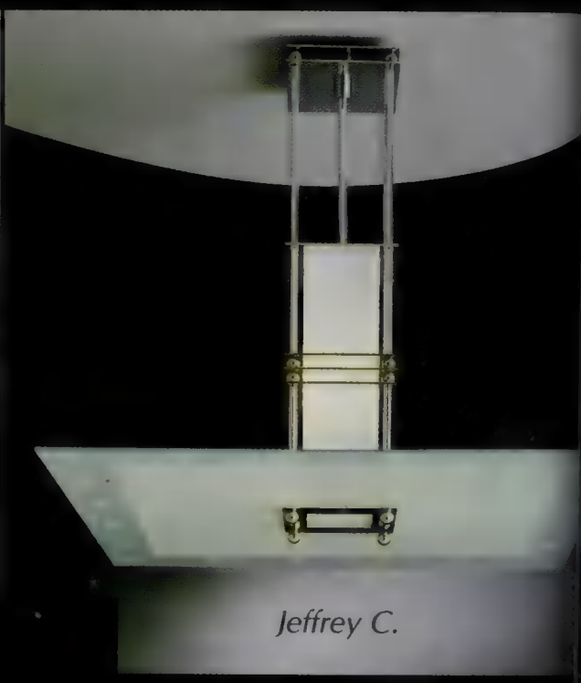
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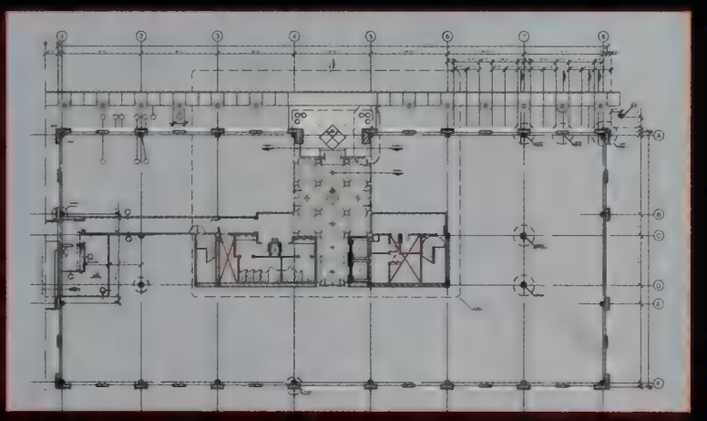
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CIRCLE 11 ON INQUIRY CARD

SPEAK OUT: "Utopia isn't what it used to be"—the challenge of preserving early Modernist houses.

BY ALASTAIR GORDON



Alastair Gordon is currently writing and co-producing "The Struggle for American Space," a six-hour documentary series for Public Television about the built environment in the 20th century. Previously, he served as the special projects coordinator at the Princeton University School of Architecture.

Early Modernist houses present a new kind of problem for posterity. Now that we have reached the end of this century of innovation, how much of it are we obliged to preserve for future generations? Utopia isn't what it used to be. The lean lines and crisp geometries of the Modern movement have not aged with much elegance. Rain, ice, and mildew do their best to undermine the perfect Cartesian box. Walls warp, flat roofs peel back, chrome flakes off. As they grow old, early experimental houses tend to look wrecked like an automobile, rather than mellowed with age like an old barn or a Greek Revival house. The Modernist esthetic was about clean, smooth surfaces, minimal forms. Buildings were meant to look shiny and new in the spirit of the machine. A little chipped paint and rusting metal could ruin the impression.

But how should we preserve a house that was intentionally designed to push the limits of habitability and challenge 19th-century notions of domestic space? Although attitudes are beginning to change, Modernism is still a hard pill for most preservationists to swallow. There is often little sympathy for the period and, in some cases, outright hostility. For many, it represents the very kind of architecture that drove them into the preservation field in the first place. Early Modern houses used experimental materials and techniques that are no longer available. While it is easy to reproduce a mahogany newel post from a Victorian house, it is not as easy to reproduce a nickel-plated lighting fixture or a Bakelite shower stall.

The Gropius house in Lincoln, Mass., luckily fell into the loving hands of the Society for the Preservation of New England Antiquities (SPNA). Home to Walter Gropius for 30 years, the house has been operated as a museum since 1985. SPNA, which owns many early New England houses, had never dealt with such a relatively new house and had to assume a completely different attitude. The Society's curators felt that a sense of time should be retained. Despite discussions with Gropius's daughter, all the chrome was left in its pitted and tarnished state. The old cork floors, on the other hand, were replaced. The bronze screening that Gropius had used around the screened-in porch couldn't be matched so they used an aluminum screen that was painted black. The silk curtains were replaced with nylon ones for durability.

But the Gropius House was an exception to the rule. More often than not early Modern houses are forgotten, remodeled beyond recognition, or demolished, as was the case with the Robert Motherwell house in East Hampton, New York. The Quonset hut-style house for the noted painter was a bold experiment built at the end of World War II. A precursor of the industrial look of more recent years, it was the only project built in America by the noted French designer Pierre Chareau, who was best known for the Maison de Verre in Paris. It wasn't old enough to be historically listed or conventional enough to be accepted as a worthy architectural legacy. It was demolished in 1985 to make way for a faux "Adirondack style" cottage, but its destruction lead to a public outcry.

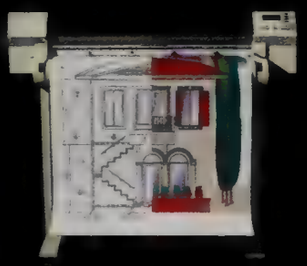
A few months later, when another experimental house, the Aluminaire House, was threatened, there was enough concern to organize a relief effort. Designed by Albert Frey and A. Lawrence Kocher, the Aluminaire House was a radical experiment in prefabricated technology. Wallace Harrison bought the structure and rebuilt it on his property in Huntington, Long Island. When the house was threatened with demolition, the New York Institute of Technology saved it. They carefully disassembled the structure, moved it onto their campus, and began the process of erecting it as part of a student project. When finished, it will serve as a museum of 20th century housing.

When our grandchildren look back on the architectural legacy of the twentieth century, they may wonder why so little of it remains intact. Certainly, these machine-age ruins of American Modernism have proved to be as ephemeral as the theories that created them in the first place.

Contributions: *If you would like to express your opinion in this column, send submissions: by mail (with a disk, if possible) to Speak Out, Architectural Record, 1221 Avenue of the Americas, New York, N.Y. 10020; fax 212/512-4256; or e-mail:rivy@mcgraw-hill.com. Essays must not exceed 700 words. The editors reserve the right to edit for space and clarity. Where substantial editing occurs, the author will receive final text approval.*

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MENTORS: How many times is enough? A designer who has failed the NCARB design exam 30 times.

Robert K. Clough, FAIA, is managing principal and vice president of Loebl Schlossman & Hack/Hague Richards in Chicago. He serves as a trustee for the AIA Trust and Chairman of the National AIA Licensing Committee. A visiting lecturer at the University of Illinois School of Architecture, he has spoken to a variety of audiences about firm management and licensing issues.

Note: A response was requested from the NCARB. Lenore Lucy, the executive vice president, replied that she was unable to comment at this time.



I am a 48-year-old designer with 30 years of experience. My question is this: How many times is enough? How many times should a hard-working, professionally talented "designer" be required to take the only subjectively graded division, the design section of the NCARB exam, and fail, before he or she should be able to be licensed by grandfathering or other means, i.e. interview or professional subscription? Remember the stated purpose of this portion of the exam is to test the "minimum graphic competency" of the applicant.

The reason and background for the question is this: I have taken and failed the design section 30 consecutive times in the past 15 years at a personal cost of about $45,000 (test, lost wages, lodging, etc.). I passed eight of nine parts of the first test in 1981. I continue to take this exam because I have wanted to be an "architect" since I was 10 years old. My exam solutions are well done, simple, complete, and I always finish. The NCARB reasons for my failure are never adequate—for example, "did not develop structural vignette." Of course I developed the structural vignette; in college, I was a paid structural tutor and a few years ago, I worked as a draftsman in a structural engineer's office.

I sincerely hope you will publish this letter with some sort of response, and I hope someone out there involved with the NCARB will recognize that something is wrong with the system. How many times is enough? I do not use a computer. Now what?
—Bracken Raleigh, AIA Assoc., Telluride, Colo.

P.S. I do have my own design firm. Next year's estimated building cost out of this one-man design office is $5.3 million.

Robert K. Clough, FAIA responds:
My advice is to do what it takes to prepare yourself to pass the exam. I appreciate your frustration, but the Architecture Registration Exam is one requirement that is universally required to practice architecture. The trend in licensing is to allow less opportunity for those who do not follow the path of obtaining an accredited degree, IDP training, and passing the ARE. Fewer and fewer opportunities to develop equivalencies are being provided by states.

NCARB recently voted to require an NAAB accredited degree in architecture to qualify for an NCARB Certificate. This eliminates the opportunity to meet the education requirement through a combination of formal education and training. Once the accredited degree is required for the certificate, many states will follow suit requiring it for reciprocal licensing.

The AIA, by the way, has long supported the use of reasonable equivalencies to meet certificate requirements for education and training.

One argument for computerizing the exam has been to reduce the "subjectivity" of human graders. The result is to replace a holistic design with a series of vignettes. The exam now costs twice as much as the paper exam, and eliminates from the exam the need to assimilate competing requirements into a comprehensive building solution. The subjectivity is gone, but so is evaluating the one skill that makes architects unique from other design professionals. Ours is a subjective profession. Completely removing the subjectivity to accommodate standardized computer testing is not in our long term best interests if the result is to remove testing a core competence of the profession.

If I were you, I would find someone who has been a grader of the paper exam to better understand the grading criteria. You must practice to become proficient with the CAD program, research the building type used for the exam to become conversant with the program issues and basic parts, and study life-safety requirements in which you are not fluent. It is clear that you have great determination. Prepare yourself, and go into the exam with the conviction that you will pass.

Questions: *If you have a question about your career, professional ethics, the law, or any other facet of architecture, design, and construction, send submissions: by mail to Mentors, Architectural Record, 1221 Avenue of the Americas, New York, N.Y. 10020; fax 212/512-4256; or e-mail: rivy@mcgraw-hill.com. Submissions may be edited for space and clarity.*

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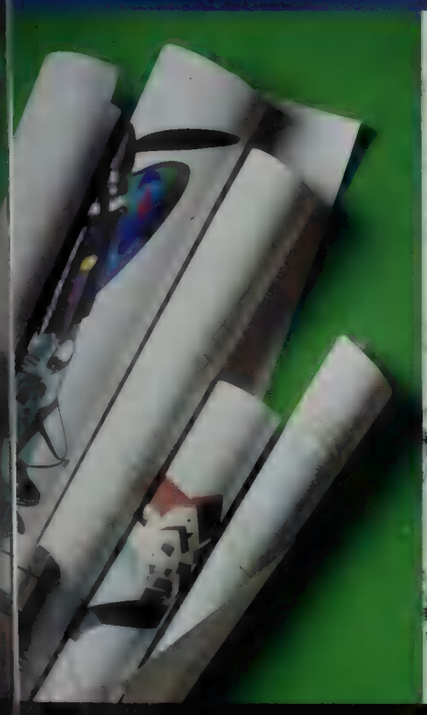


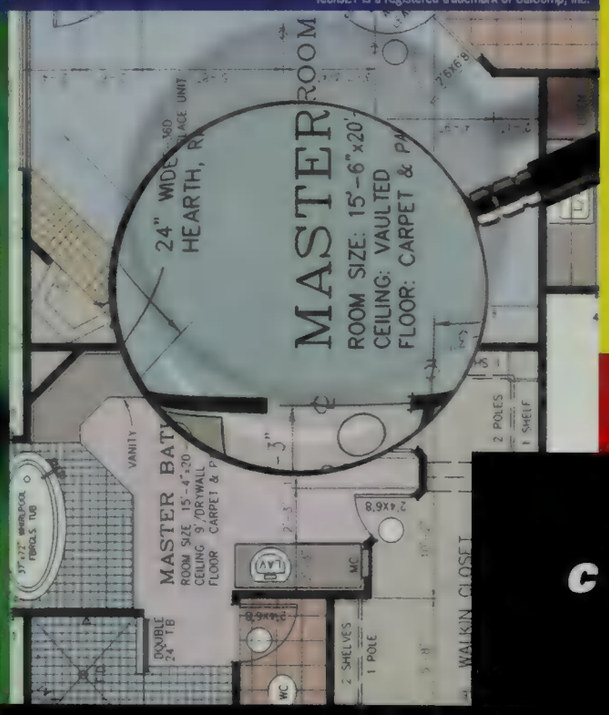
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PULSE: RECORD readers were asked: Does design review in historic districts restrict creativity?

NO: 79%

No: "The question increased my pulse rate. As a preservation professional, I've seen far too many architects and developers blame the review process for their own mediocre designs. It is not the review process itself you're really questioning, but the guidelines. In New Orleans, the French Quarter's district commission is charged with protecting the 'quaint and distinctive charm of the Vieux Carre.' That is the guideline. Sound restrictive? In North Carolina, historic district commissions are required to insure that exterior changes are 'not incongruous.' Again, is this restrictive? What both of these guidelines have in common is to provide a context within which the design process should take place. An architect unfamiliar with preservation design philosophy needs to be sensitive to the surroundings beyond the skin of his client's building. Rather than seek input from a commission's review committee, this brand of architect brings only his large ego to the table. Then, when his proposal is challenged, he can fall back on the easy excuse that commission members are obstructionists, elitists, or worse. This self-defeating attitude smothers creativity, not the design review process."
—Lauren Malinoff, AIA Associate
North Carolina Main Street Center
Raleigh, North Carolina

No: "Guidelines and/or design review enhance the potential for creative solutions by defining the boundaries within which an architectural team must work...As we all should have learned in school, you can't solve a problem if the problem to solve has not been defined. [This] is a concept perfectly suited to the continually evolving historic district. The success of Portland's urban planning process comes largely from the enlightened approach we've taken to preserving our historic districts." —Gary R. Bley, AIA
Portland, Ore.

No: "Great architecture results from creative solutions to design problems involving a myriad of constraints, including site, client, program, budget, etc. Historic district regulations are merely another constraint. We've been up against review panels, the decisions of which seemed arbitrary, but in general such review is important. Sometimes they help to keep us on the right track, as long as their role is clearly defined."
—Robert J. Hotes, AIA
Susan Maxman Architects
Philadelphia, Pa.

YES: 21%

Yes: "Is this bad? No. How important is creativity in the urban context? Negligible. Personal artistic creativity is an outmoded concept that has been seen as the architect's right since the triumph of the Modern movement about 40 years ago. A far more worthy definition of architectural creativity is the expression of a community's aspirations. Design review restricts personal creativity, but enhances creativity for the community's sake."
—David Weaver, Architect
Newport Beach, Calif.

Yes: "Design review in historic districts does restrict architects' creativity. But restrictions on architects' creativity are not only in historic districts but in the architectural profession as a whole."
—Carwell Dera
Boston, Mass.

This Month's Question:

Do gated communities have value?

A recent poll conducted in *USA Weekend* magazine asked readers, "Would you live in a gated community?" The result: 65 percent responded yes, 35 percent said no. Those in favor say gated communities are safer and more communal. Those against say they are divisive and offer a false sense of security. Eight million people now live in 20,000 gated communities across America.

Do you believe in the value of gated communities? ☐ Yes ☐ No

Let us know your opinion

May an editor contact you for further comment ? ☐ Yes ☐ No

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CIRCLE 11 ON INQUIRY CARD

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Architect Richard Smith grew up in Montana's Flathead River valley, exploring its forests, paddling its lakes and streams and marveling at the abundance and variety of its wildlife. So when he was asked to design a home perched above the waters of Flathead Lake, his inspiration was the majestic bird that makes its home in the same idyllic setting: the osprey.

Since the windows would be the key element in creating the look of a bird in flight, Richard spoke with all of the top manufacturers. More than one claimed they were impossible to build. Others were eliminated from consideration because their solutions compromised the design. Still others, because they couldn't provide the low maintenance finish the owner requested. Only one company rose to the challenge. Marvin Windows & Doors.



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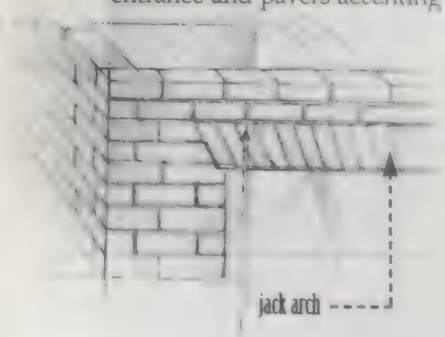
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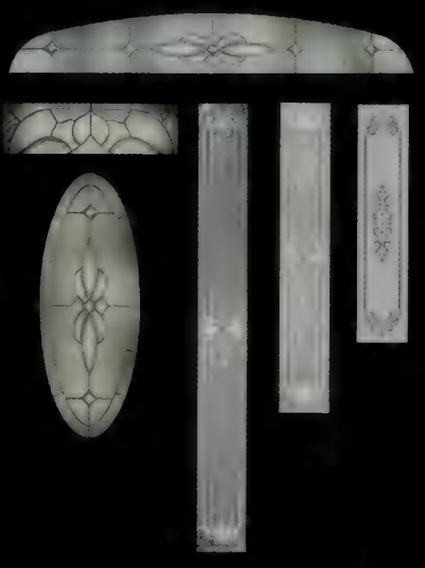
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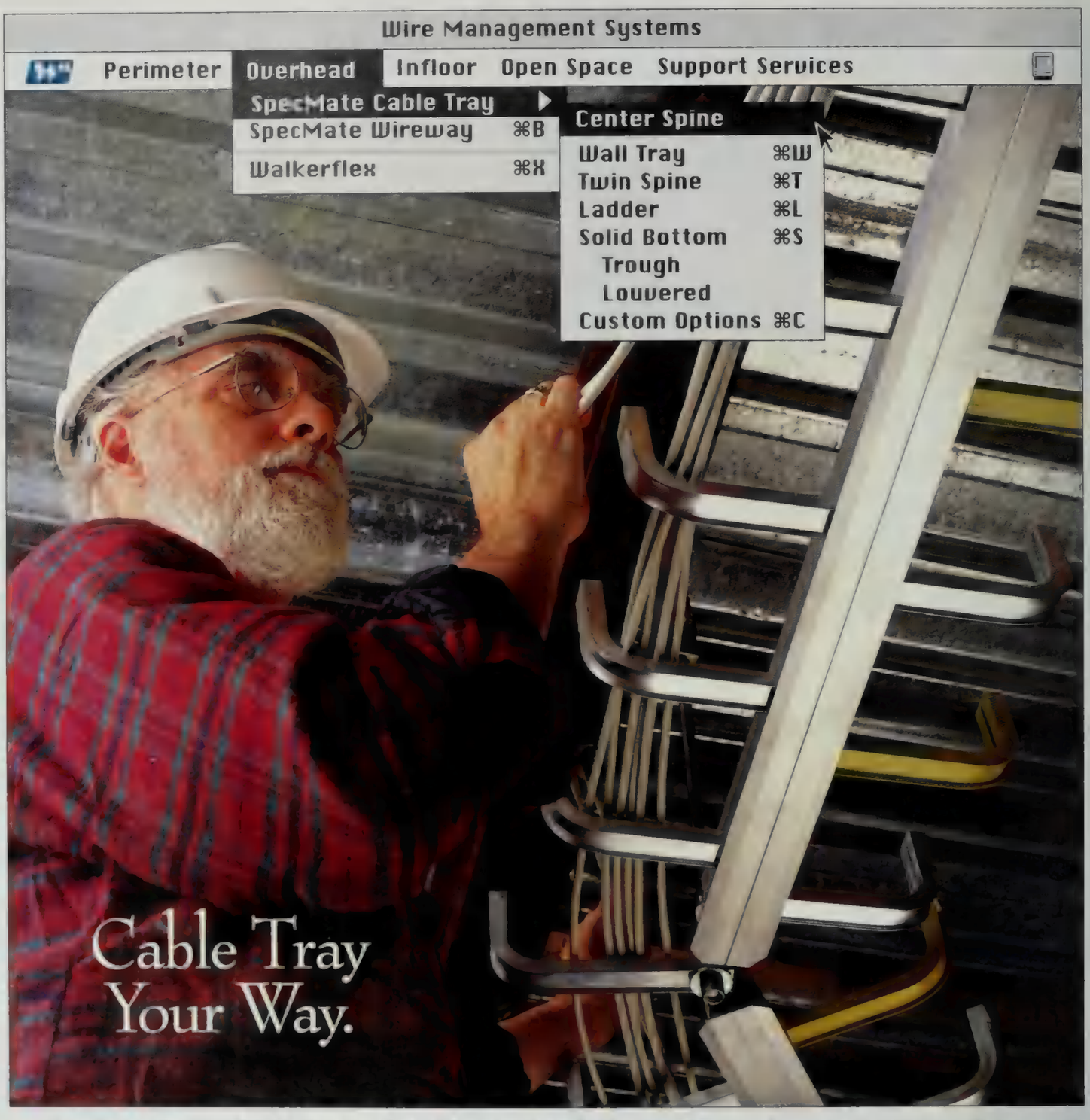
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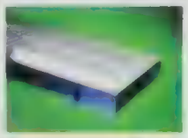


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CIRCLE 18 ON INQUIRY CARD

CHICAGO FIRM TO DESIGN REPLACEMENT FOR BOMBED FEDERAL BUILDING

Nearly two years after 168 people died in the massive bombing of the Alfred P. Murrah Federal Building in Oklahoma City, the Chicago firm of Ross Barney + Jankowski has been selected to design a replacement complex that probably will be within walking distance of the blast site. Because survivors of the April 19, 1995 attack will be working in the complex, defensible space will be high on the design agenda.

The job was awarded by the U.S. General Services Administration (GSA) as part of its Design Excellence Program. Twenty firms responded to a request for qualifications and five finalists were interviewed. The process was separate from the ongoing international design competition for an Oklahoma City memorial honoring the victims and survivors of the bombing. A winner of that competition is to be announced this summer. The projects, however, are related.

The probable site for the new federal complex is a four-block stretch that is kitty-corner to the future memorial. If the memorial, which will encompass the Murrah Building footprint, is supposed to heal past wounds, the new building can demonstrate that terrorists have not triumphed by forcing the nation into fortress architecture.

Teamed with an Oklahoma City firm, The Benham Group, Ross Barney + Jankowski appears well-suited to this challenge. In AIA Honor Award-winning projects, such as a Chicago elementary school in a gang-plagued neighborhood [Seward Hedges Area School, RECORD, August, 1993, pages 92-95], the firm has created sanctuaries from urban violence that convey joyfulness by using bright colors and bold geometry.

The GSA has not mandated whether the complex will consist of one or more buildings. But the project almost surely will be low-rise, in part, because small-scale structures are less inviting targets for terrorists. Completion date for this project, expected to cost $22 to $32 million, is 2001. *Blair Kamin*



"HELLO DOLLY" KICKS OFF REOPENING OF PHOENIX'S ORPHEUM THEATRE

Phoenix's 67-year-old Orpheum Theatre, the city's only historic theater, was recently reopened with great fanfare as crowds lined up at the box office to see Carol Channing perform in "Hello, Dolly!" The restored 1,400 seat vaudeville house underwent an eight-year, $14.2-million adaptive reuse program and renovation by vanDijk, Pace, Westlake Architects of Cleveland, Ohio.

The first phase of the Orpheum project included expanding the size of the stage and constructing a modern loading dock and rehearsal facilities. The exterior renovation in the second phase included adapting a marquee design found in the original architect's designs but never built. A new lobby and box office were constructed around the octagonal tower at the building's front.

The lavish Spanish Baroque interior was carefully restored in the third phase, including such details as the zodiac signs in the lobby door panels, a peacock design on the circular staircase, and the auditorium's landscape mural that is accompanied by a ceiling that transforms a sunset into a starry sky. The Spanish courtyard design on the walls was created to give the illusion of a villa with views of distant landscapes. Inspired by the Italian Davanzati Palace, the mezzanine lobby features glazed-wood paneling with faux-stone upper walls.

The theater receives water, electricity, and cooling from the modern 20-story Phoenix City Hall, located southwest of the theater and connected to it by an atrium. "The Orpheum was an exciting destination in 1929," said architect Paul Westlake. "In that era of movie palaces, the theater was considered to be as important as the show." History may be repeating itself in Phoenix. *Danielle Beaugureau*

WORK IS UNDERWAY ON INDIRA GANDHI CENTER DESIGNED BY AMERICAN ARCHITECT

Construction is well underway on the initial phase of the 1.5-million-sq-ft Indira Gandhi Centre for the Arts in New Delhi, India, designed by American architect Ralph Lerner, dean of the School of Architecture at Princeton University. When the entire complex is completed in about 10 years, it will consist of five components arranged around five courts: a tribal and folk arts research center, research libraries, central administration, a research institute for the arts, and a theater complex containing a symphony hall seating 2,000, a national theater seating 800, and a traditional Indian theater.



The center, which will be India's premier cultural institution, follows an east-west axis, covering about a quarter of a 25.5-acre site located at the heart of the Indian capital, between the seat of government and the India Gate War Memorial. The site is in accordance with a master plan for the city created by Sir Edwin Lutyens in 1921. "New Delhi is a fantastic city, and working at the geometric heart of it has been very interesting from every point of view," said Lerner. "It has been a tremendous challenge to orchestrate the urban design issues and the architectural issues."

Lerner's design was selected from among 200 entries in an international design competition sponsored by the International Union of Architects in 1986. The phase now under construction—a 325,000-sq-ft building section housing the research institute and libraries—is expected to open in about a year. ***Virginia Kent Dorris***

KINDERGARTNERS LEARN ABOUT ARCHITECTURE When the parents of kindergartners at a magnet school in Los Angeles decided to give the playground a facelift, they made it not only fun but a place to introduce the kids to architecture in a "natural, interactive way," according to architect David Echt, whose firm Mackler Echt & Associates donated expertise and $500 to the project.



The Kindergarten Interactive Design Space (K.I.D.S.) at South Carthay Community School was built over four weekends, all with volunteer labor and donated materials. Among the highlights: a replica of the Carthay Circle Theater, a neighborhood landmark lost to the wrecking ball; a replica of the Brown Derby restaurant; a pop-architecture post office; a ball throw that allows kids to "feed" jungle animals; double painting easels resembling a drive-in movie theater; a pretend movie studio; and a rebuilt playhouse.

PUSH IS ON TO USE DESIGN STUDIO METHODS IN NATION'S SCHOOLS

Is there something about the way architects are educated in the design studio that could benefit students in the nation's elementary and secondary schools?

The American Architectural Foundation and The Carnegie Foundation for the Advancement of Teaching think so. The two organizations have teamed up to sell the idea that methods found in the best design studios—critical thinking, problem-solving, teamwork and integrative learning—might be just what America's struggling public schools need to meet reform goals.

Representatives of the two foundations suggested this idea to 200 teachers and principals at a meeting in New Orleans of the National Consortium for Specialized Schools of Mathematics, Science & Technology. The consortium is made up of 55 schools, including the Bronx High School of Science, the [illegible] School for Math, Science and the Arts, and the South Carolina School of Science and Mathematics.

[illegible] Sandler, director of education at the American Architectural Foundation, told the gathering. Rather, the objective is to use design studio methods to help students draw more sophisticated connections among subjects such as math, science, and the arts.

The long range benefit, Sandler explained, is "a thoughtful citizenry, equipped with skills and values, taking reasoned action necessary to shape cities, towns, and countrysides into better places to live."

Sally Reed, a senior consultant at The Carnegie Foundation, noted that only a smattering of teachers around the country teach about architecture in any meaningful way. And shockingly, she added, not a single state includes specific knowledge of architecture in its curricular mandates.

"We have such a tendency to focus only on math and science at our schools," agreed Steve Lynch, a teacher at the Bronx High School of Science. "We need to find ways to integrate math and science, and the arts. We need to give education a soul." Learning more about architecture, Lynch said, might be the way. *Lee Mitgang*

PARSONS STUDENTS DESIGN/BUILD ART GALLERY FOR HIGH SCHOOL

A dozen architecture students at the Parsons School of Design in New York City got to do what few architecture students ever get to do—design and build a project from start to finish. The project, a 1,000 sq-ft art gallery at Washington Irving High School in Manhattan, was theirs alone from drawings to opening exhibit.

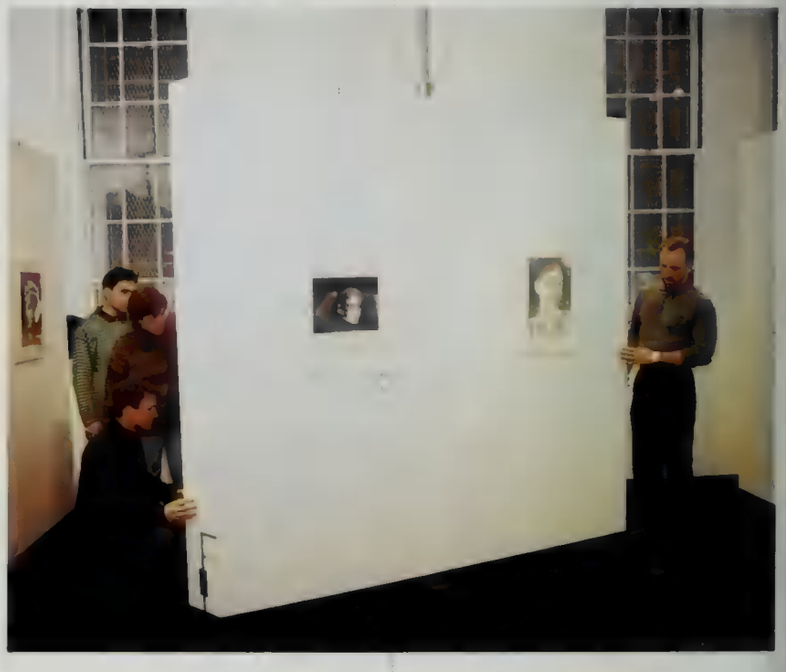
Along the way, something remarkable happened: The project galvanized everyone connected, especially the staff and students of the high school, Washington Irving, one of the city's premier art schools. "In this school system, it's almost impossible to get something done...this was amazing," said Toby Needler, assistant principal, who dreams of finding the funds to open the gallery to the public and neighborhood artists. "Everyone was asking when the gallery would be finished...Now they say we don't just have a school gallery. We have a real art gallery."

The Parsons students designed the white-on-white gallery in their construction technology course taught by architect James Garrison. They began by demolishing a warren of offices and extricating 75 old file cabinets. Construction standards were kept high: Pivoting exhibition walls were carefully prefabricated, and supporting cables were ordered from Switzerland.

For the students, "it was a very synthetic experience," said Garrison. It was "particularly important for female students, who are less likely to get hands-on building experience," added Karen Van Lengen, chair of Parsons' architecture and environmental design department. Rachel Zwick, 24, found herself wielding sledge hammers and lugging heavy sheets of drywall. And John Dohlin, a 34-year-old former biologist (one of six students pursuing architecture as a second career), found the "amount of detail that goes into a project like this eye-opening...there's so much."

The gallery was made possible by a $25,000 grant from 1930 Washington Irving alumna Evelyn Stefansson Nef. The project received help from New York-based Jack Kaltner Construction Management, and materials from Lightolier Inc. and General Electric Corp. On the open market, the gallery would have cost $75,000, according to Van Lengen. *Carol Reed*

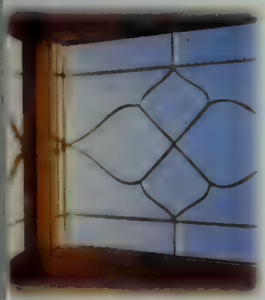
Parsons students adjust the pivoting display wall in the art gallery they designed in a Manhattan school.



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TEXAS LEGISLATORS BATTLE OVER ARCHITECT REGISTRATION EXAM

The new computerized Architect Registration Examination (ARE) is causing a flurry of heated debate in the Texas State Legislature. At the core of the argument is Bill 218, which would drop the state's statutory but long unenforced $300 cap on fees for the ARE. The issue, which arose because of the nearly 100 percent fee increase for the computerized exam, has legislators now focusing attention on the whole question of how the state oversees the certification process.

The bill sailed through the Senate but ran into strong resistance from Representative Jessica Ferrar, D-Houston, in the House. Ferrar, who has an undergraduate degree in architecture from the University of Houston, was outraged that the fee rose from $545 in 1996 to $1,020 this year for the computerized version. She was further disturbed that with no cap—bogus or not—the state relinquishes its control over any future increases in test fees by the way it contractually allows The National Council of Architecture Registration Boards (NCARB) to set prices. The fees are passed through to state registration boards, such as the Texas Board of Architectural Examiners (TBAE), then to test-takers, often with additional state fees tacked on.

"The [test price] increase seems especially disproportionate to architectural interns who stand to earn substantially less than starting doctors and attorneys," Ferrar said. Doctors pay $800 and lawyers $275 to take professional licensing exams in Texas.

Besides opposing Bill 218, Ferrar has since tacked a rider—which passed unanimously—onto an appropriations bill, House Bill 1, which passed the House March 20 and is currently in the Senate. [illegible] prohibits students in Texas [illegible] taking the ARE at the [illegible]. At press time, the [illegible] to meet with [illegible] to discuss [illegible].

alternative test options. Rep. Ferrar is pressuring NCARB to allow students to take the old paper and pencil test, but thus far NCARB has refused.

NCARB, for its part, claims the computerized test, which it spent 14 years developing, is priced fairly. According to Lenore Lucey, executive vice president, NCARB did "a good job of passing along only the actual costs of developing, administering, and grading the ARE."

Further, she argued, the fee that NCARB collects from member boards and Canadian associations for developing the exam has actually gone down, from $485 in June 1996 to $427, a decline she attributes to the efficiencies gained from a computer-administered exam.

The cost has skyrocketed, Lucey claims, because of the $533 fee now charged by the Chauncey Group International, the test's administrator, which covers the costs of operating test centers, maintaining test security, operating a scheduling system, and maintaining a database of applicant appointments.

Although students and interns generally applaud the advantages of the computerized test, many are dismayed at the price tag. "We don't buy NCARB's numbers or their arguments," said Casius Pealer, national vice president of the American Institute of Architecture Students (AIAS). "Our feeling is that the computerized version should cost much less to administer, not more. We also feel that the cost of the test is prohibitive, and that NCARB's reply that payment can be extended on a credit card is gratuitous at best for interns whose average yearly salary is about $20,000."

As the saga plays out in Texas, 13 other states are reportedly holding off on signing their agreements with NCARB, "for a variety of reasons that may or may not have anything to do with test fees," Pealer said. *Julie Moline*



AMID DISPUTES, ARQUITECTONICA DESIGNS NEW MIAMI HEAT ARENA

An argument between two sports team owners, followed by a citizens' protest over the choice of site, form the backdrop for Arquitectonica's selection as designer for the new Miami Heat basketball arena in downtown Miami.

The Florida Panthers hockey team and the Heat had shared the nine-year-old Miami Arena before a split developed between Heat owner Mickey Arison and Wayne Huizenga, owner of the Panthers.

The new Heat arena will sit at the edge of Biscayne Bay, a site hotly contested by citizens' groups, who unsuccessfully sought a voter referendum on the location. The arena will have 19,364 seats with 133 corporate suites. Sheathed in glass and concrete, the $165-million facility will allow views of the Miami downtown skyline or of cruise ships berthed in Biscayne Bay from various concourses. Outdoor balconies and terraces will allow more unobstructed views. Parking for 1,800 cars will be tucked below the 14-story structure.

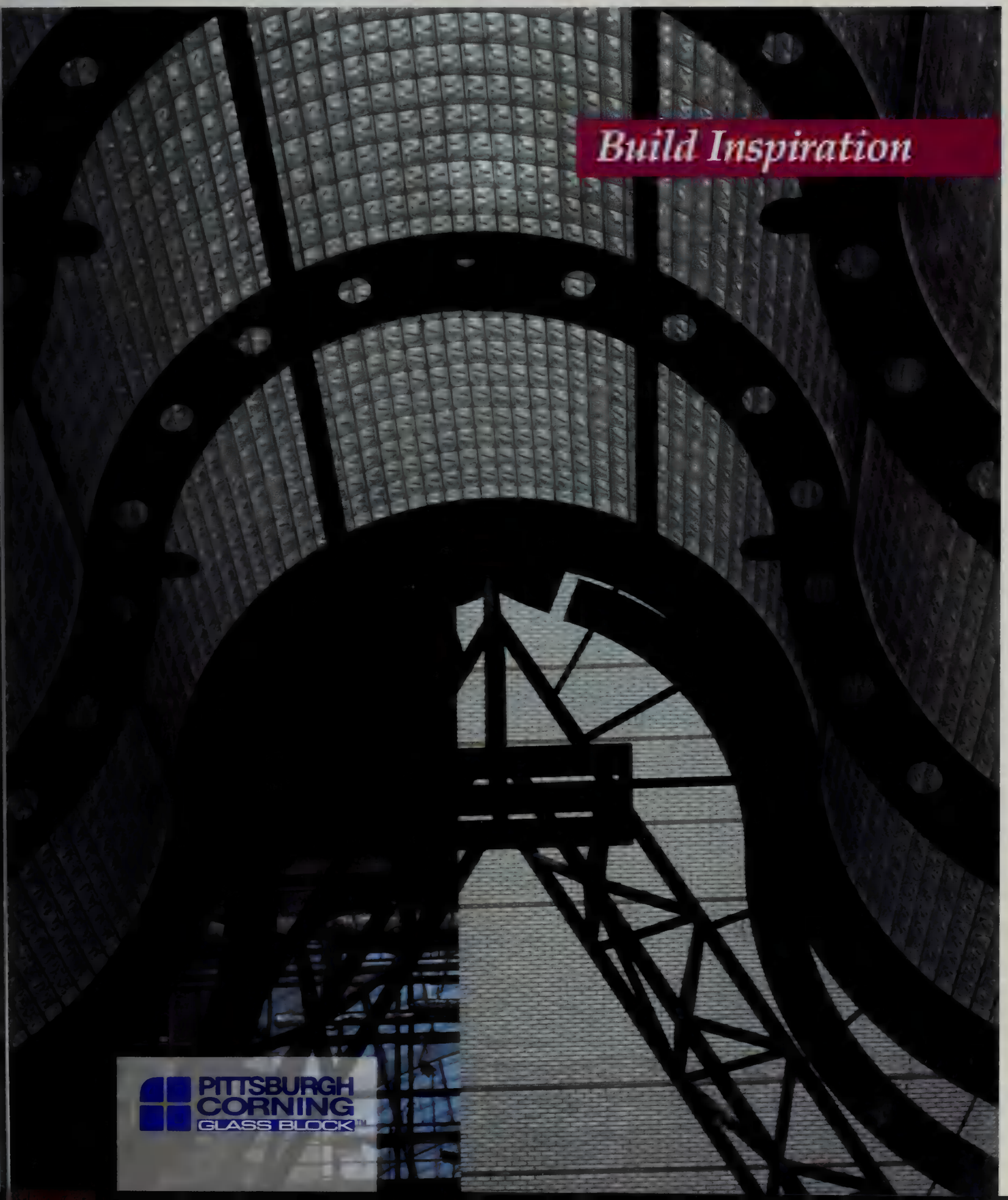
Arquitectonica of Miami will design the arena in conjunction with Heinlein Schrock of Kansas City.

A second, $172-million, 20,184-seat arena for the Panthers, designed by Ellerbe Beckett of Kansas City, is under construction 30 miles away in suburban Fort Lauderdale.

PROTEST IN SYDNEY Thousands of protesters demonstrated recently over the construction of a massive apartment building (pictured) near the Sydney Opera House. The 237-unit building is the first of three that will block the once-sweeping view from Circular Quay, the site of the first British landing in 1788.



V I S I O N A R Y

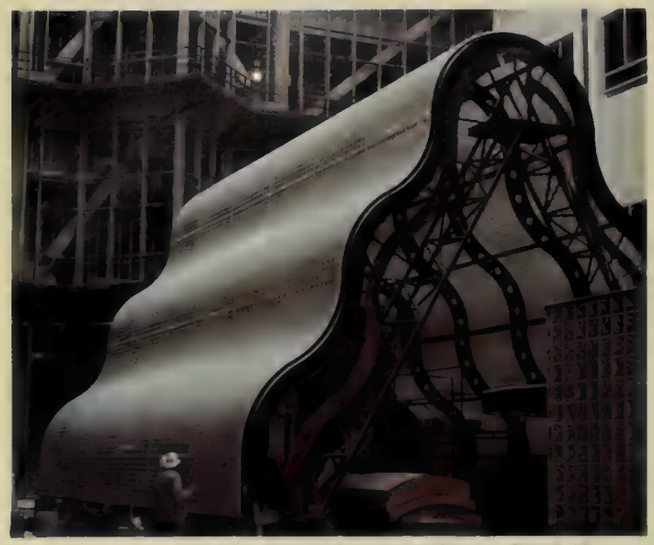


See Things Differently

ABOUT THE COVER

A work in progress, the chapel at the Veteran's Administration Hospital uses light to inspire parishioners. Pittsburgh Corning's glass block fills the rotunda with natural daylight, bouncing off the metallic supports, enlightening all who enter.

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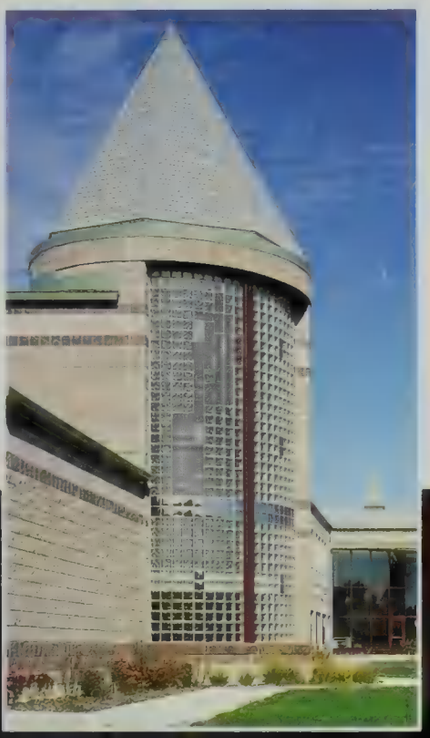
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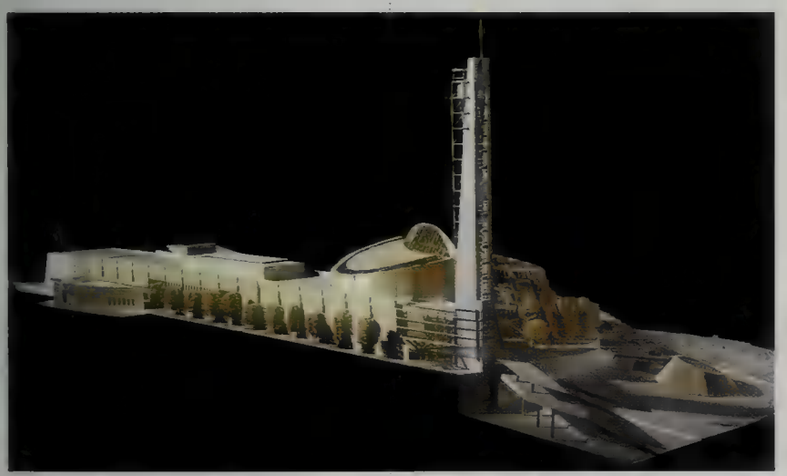


A/R (4/97)

CASINO FUNDS $135-MILLION NATIVE-AMERICAN MUSEUM CENTER

The Pequot American Indian tribe of coastal Connecticut, 437 members strong, is constructing a $135-million museum and research center devoted to American Indian histories and cultures—the largest Native-owned institution of its kind. To be opened on June 1, 1998, the center is located on the wooded Mashantucket Pequot Reservation, reconstituted in 1983 at its original Mystic River basin site by returning Pequots, who also own the nearby Foxwoods Resort Casino.

It is the phenomenally successful casino that has supplied most of the money for the center.



The 2.5 million-sq-ft resort facility contains four casino halls, a 312-room hotel, and a separate, 280-room inn.

"We have worked hard to re-establish our community on tribal land, and the opening of the center will be the culmination of that effort and determination," explained Richard "Skip" Hayward, chairman of the Mashantucket, Conn., Pequot Tribal Council.

Architect Polshek and Partners of New York City has designed a low-rise circular and linear structure looking out toward a verdant cedar swamp that is considered a Pequot "sacred place," said design principal James Stewart Polshek. A unifying, circular gathering space with soaring 42- to 60-ft-high glass with cedar and steel walls at the center's entrance leads into a two-level museum enclosed by an undulating glass and stone wall, a landscaped terrace, and a four-story research center, two levels of which are below ground.

Exhibit space designed by DMCD Inc. and Design Division Inc., both of New York City, consists of 90,000 sq ft of dioramas, displays, films, and interactive computer programs covering Pequot ancestry from 11,000 years ago through a 1637 British massacre that nearly annihilated the tribe, to the present.

The Mashantucket Pequot Museum and Research Center will contain a 150,000-volume research library, a 10,000-volume children's library, a storytelling room, and a 450-seat auditorium. Research-sharing agreements have already been signed with the Smithsonian, the British Museum, and the Newberry Library of Chicago.

The center's archaeological and ethno-history resources will make it "one of the premier institutions in the U.S. for anyone interested in learning about the American Indian," said Theresa Hayward Bell, museum and research center director.

The center's 316,000 sq ft make it "considerably larger than even the American Museum of the American Indian on the Mall in Washington, D.C.," Polshek noted, adding that the site "resonates with the voices of Indians thousands and thousands of years ago."

ARCHITECTURAL PRESS ROUNDUP

TO GATE OR NOT TO GATE

USA Weekend, January 31-February 2, 1997 "Which side of the fence are you on?" is the cover story in the Gannett weekend newspaper supplement with a readership of 40 million. According to author David Diamond, an estimated eight million people in the U.S. now live in 20,000 gated communities. The article raises such questions as: Do gated communities accelerate economic and social fragmentation? Could they divide the nation in ways similar to racial segregation in the past? Are they indeed safer or do they merely give a false sense of security? Readers were invited to call a 900 number and answer the question, "Would you live in a gated community?" The result, printed in a subsequent issue, showed 65 percent responding yes and 35 percent no.

THERE GOES BERKELEY!

Harper's Magazine, March, 1997 "It's as if after the eruption of Vesuvius, Pompeii had reinvented itself as Las Vegas," writes David L. Kirp, in his article "There Goes the Neighborhood." Kirp, a professor of public policy at the University of California-Berkeley, is referring to the Berkeley Hills today, five years after a wildfire destroyed thousands of homes. Too many of the replacement houses are "architectural contraptions risen crazily from the ashes," he bemoans, including such instant landmarks as the submarine, saxophone, and Air Stream houses. Writes Kirp: "I came to these ominous hills last summer in hopes of understanding how this happened—how so many seemingly well-intentioned people, most of them possessed of large sums of insurance money...could make such shambles of what was once a lovely hillside."

RANKING ARCHITECTURE GRADUATE SCHOOLS

U.S. News & World Report, March 10, 1997

1. Harvard 2. MIT 3. Princeton 4. Columbia 5. Yale 6. Rice, 6. Berkeley 6. Virginia 9. Pennsylvania 10. Texas-Austin. The East continues to dominate. What else is new? The magazine sent questionnaires last fall to deans, top administrators, and senior faculty of accredited schools offering the master of architecture program. They were asked to rank the reputations of schools, taking into account the school's scholarship, curriculum, and the quality of faculty and graduate students.

PORTMAN IN PROFILE

The Wall Street Journal, February 21, 1997 In a kind of "whatever happened to..." profile, the *Journal* reports that "three decades after John Portman Jr. dazzled the U.S. design scene with the Hyatt Regency Atlanta...the 72-year-old architect is making a comeback in Asia." Says Portman, who has projects in seven Pacific Rim countries, "We don't think the world has run out of opportunities for what we do."

ARCHITECT PITCHES AIRLINE

In many newspapers. Architect Shin Takamatsu of Kyoto, Japan, in an advertisement for Northwest/KLM, says "Architecture is like calligraphy. The power isn't in the structure, it's in the space around it. Which is why I appreciate the space in World Business Class." As pitch lines go, not as catchy as "Coke is it."

SAN FRANCISCO PALACE PACKING THEM IN AFTER SEISMIC RETROFIT

If attendance is any criteria, the $36.5-million seismic retrofit, restoration, and expansion of San Francisco's Palace of the Legion of Honor, the museum housing the city's ancient and European art collections, is a success. Five times as many people visited the beautified Beaux Arts structure in 1996, just after it reopened, as in 1991, just before it closed. In 1997, attendance has leveled off to a projected 300,000 visitors annually—still double the 150,000 visitors a year before work began, according to a museum spokesperson. The renewed museum has also become a favored venue for world-class art exhibits and hundreds of special events from marriages to concerts.



Designed by George Applegarth in 1924, the Palace underwent three years of seismic retrofitting—the largest ever for a museum and one that garnered an $850,000 grant from the National Endowment for the Arts as a model program. Architects Edward Larrabee Barnes and Mark Cavagnero also restored the building's delicate interior architecture, renovated public service and support areas, installed state-of-the-art environmental and security systems, and added two underground levels for galleries and other public spaces, increasing the museum size from 79,000 sq ft to 117,000 sq ft. In addition to the grant, funding came from $23.8 million in donations and a $12-million city bond.

Cavagnero, who became the architect of record after Barnes retired, said the difficult planning, design, and construction consumed him for seven years. "The real beauty of the project was threading all the [seismic] bracing through a fragmented weave of stage-set architectural finishes that were extremely brittle. The challenge was how to integrate all this without destroying the building and, in the end, actually enhancing it," he said

For many problems, Cavagnero's team knew of no precedents, so they had to be inventive. They saved exquisite ornate plaster cornices, for instance, by suspending them whole from guy wires, stripping down the old walls to the studs and removing ceilings, then constructing new, heavily reinforced walls that were tied into other seismic upgrades. These included a steel truss in the attic, shotcrete shear walls, and steel bracing, which anchored the original structure to the two new subterranean levels.

He had skilled artisans from a company in Berlin duplicate faux

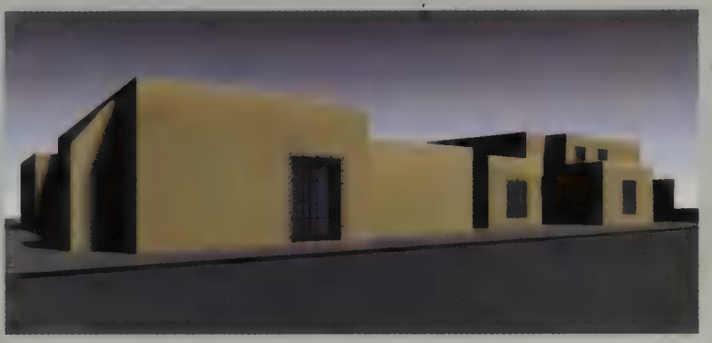
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marble or scagliola, a 17th-century Italian plastering technique. Three coats of plaster mixed with marble dust and colors were applied, then scored, and 12 coats of paint were used to duplicate the original imitation of marble. Other faux finishes were keyed to the original scagliola to get a "seamless blend of tonalities throughout the upper [original] level," Cavagnero said.

He carefully saved Tennessee pink marble floors throughout and Napoleon gray marble walls in the restored, monumental entrance hall. He produced a popular new sculpture garden—opened in mid-1996—that looks over olive and cypress trees to the ocean. "In a lot of ways," he said, "we created a brand-new building in an historical container." *Carol Reed*





O'KEEFFE MUSEUM WILL BE FIRST IN U.S. DEDICATED TO A MAJOR FEMALE ARTIST **When the Georgia O'Keeffe Museum in Santa Fe, N.M. opens July 17, following a $1.3-million renovation and expansion, it will become the largest permanent collection of the artist's work. It will also be the first American art museum dedicated to the work of an internationally acclaimed female artist.**

According to Richard Gluckman of Richard Gluckman Architects, New York City, the 13,000-sq-ft project involves the complete renovation of a former Spanish Baptist church (already adapted into a gallery in 1990) as well as the construction of a 7,300-sq-ft addition.

The collection of O'Keeffe's paintings, drawings, and watercolors will be displayed in 10 galleries daylit by six skylights with fixed external metal louvers and north-facing windows. "We tried to relate the design to the nature of space and light in the work," Gluckman said. "We accomplished that by making the natural lighting devices slightly eccentric. The light pulls one through the building on a slightly more interesting path of spatial experiences, and relates to the nature of the subject."

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DESIGN OF NEW COURTHOUSE PLAZA CAUSES HUBBUB IN MINNEAPOLIS

Designer Martha Schwartz's new civic plaza featuring earth mounds that suggest a field of glacial drumlins or a Native American burial ground is causing a stir in Minneapolis. The block-long plaza fronts the new U.S. Courthouse designed by Kohn, Pedersen and Fox Associates, and is located across from city hall.

Built over a city-owned parking ramp, the plaza could not be configured as a wide open space for security reasons. The General Services Administration (GSA) requested a design solution evoking Minnesota's natural history.

To symbolize the state's natural landscape, Martha Schwartz, Inc., of Cambridge, Mass., used earth mounds, planted with small jack pine trees and narcissus. Alongside the mounds are log benches stained silver to represent the state's lumber industry heritage.

"Too humpy," said a local architect of the mounds. "Aren't they like Indian burial mounds?" suggested a businessman. Schwartz responded: "They are not at all the same shape as burial mounds. We met with Native American groups to make sure." The earth mounds are tear-shaped and range from three to nine ft in length. As for staining the logs silver, the designer explained, "I wanted to transform that image into the present context."



At city hall, where offices directly overlook the new plaza, the city's chief administrator said, "It's an unfortunate use of public space. Why not be realistic?" Countering that view was local architect Milo Thompson, who supported Schwartz in the review process. "People may think it's a bit bizarre but once they learn what was intended, I think they'll find it extremely engaging," said Thompson.

COMPETITION CHALLENGES STUDENTS TO DESIGN BLUEBEARD'S CASTLE AND POOH'S HOUSE

Graphisoft and the American Institute of Architecture Students (AIAS) have announced that Richard Meier, FAIA, will chair the 1997 jury for the Graphisoft Prize Student CAD Competition to be held June 18 in New York City.

The competition, sponsored by Graphisoft, AIAS, Architectural Record, Apple Computers, and The Architectural Review, requires students to use virtual-reality technology to present architectural interpretations of myths, legends, literary works, and musical compositions. Using ArchiCad as a design tool and QuickTime VR as a visualization tool, entrants will offer their conceptions of Bela Bartok's *"Bluebeard's Castle,"* Italo Calvino's *Invisible Cities*, Douglas Adams's *Restaurant at the End of the Universe*, *"The House of the Rising Sun"* by The Animals, Nathaniel Hawthorne's *The House of Seven Gables*, Jean-Paul Sartre's *No Exit*, the Church of Reason from Robert Persig's *Zen and the Art of Motorcycle Maintenance*, Isabel Allende's *House of the Spirits*, A.A. Milne's *House at Pooh Corner*, and Asgard from Norse mythology and Marvel Comics. The prize is open to all university students of architecture, landscape architecture, urban planning, or allied disciplines from any country. The prizes include cash, traveling fellowships, and Apple Macintosh computers and software. This is the fourth year that Graphisoft has sponsored the competition.

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NEWS BRIEFS

Terry McDermott resigns as CEO of AIA Effective July 1, 1997, Terry McDermott, Hon. AIA, executive vice president and chief executive officer of the AIA, will leave office to assume a similar role at the National Association of Realtors in Chicago. McDermott, who has held the dual post at AIA for three years, said he will "miss the membership enormously," but that the new position at the 800,000-member realtor association offered a "personal and professional challenge."

Five finalists for SCI-Arc director job The five finalists to succeed Michael Rotondi when he concludes his 10-year term as director of the Southern California Institute of Architecture (SCI-Arc) are Neil M. Denari, principal, Cor-Tex Architecture, Los Angeles; Sheila Kennedy, principal, Kennedy & Violich Architecture, Boston; Samuel Mockbee, partner, Mockbee/Coker Architects, Canton, Miss./Memphis; Lebbeus Woods, Architect, Lebbeus Woods, New York City; and the team of Robert Mangurian and Mary-Ann Ray, principals, Studio Works, Los Angeles. The decision will be announced in May.

Pratt Institute names winner of dormitory competition Pasanella Klein Stolzman Berg of New York City was the unanimous choice of jurors to design the Vincent A. Stabile Residence Hall. The residence will house 250 freshmen on the Pratt Institute's 25-acre Brooklyn campus. The three other finalists in the competition were Gwathmey Siegel & Associates, Hardy Holzman Pfeiffer Associates, and Polshek and Partners.



Pratt's new dorm will sit on the eastern edge of the Brooklyn campus.

Top books honored by AIA Two books published by Yale University Press, *Hadrian's Villa and Its Legacy* by William L. MacDonald and John A. Pinto, and *The Work of Antonio Sant'Elia* by Esther da Costa Meyer were winners of the Books of the Year award. In a new category, the 1997 Book of the Century title was awarded to *Sir Banister Fletcher's A History of Architecture*, edited by Dan Cruickshank and published by Butterworth-Architecture. The Monacelli Press of New York City was honored as Publisher of the Year.

Smithsonian gets rare engineering collection More than 5,000 original engineering drawings dating back to the mid-1800's have been donated to the Smithsonian's National Museum of American History by Lockwood Greene, a consulting, design, and construction firm. The largest single collection of early American engineering and architectural drawings, they provide a detailed look at how the nation evolved as technologies such as electricity were introduced

(*Briefs continue on page 52*)

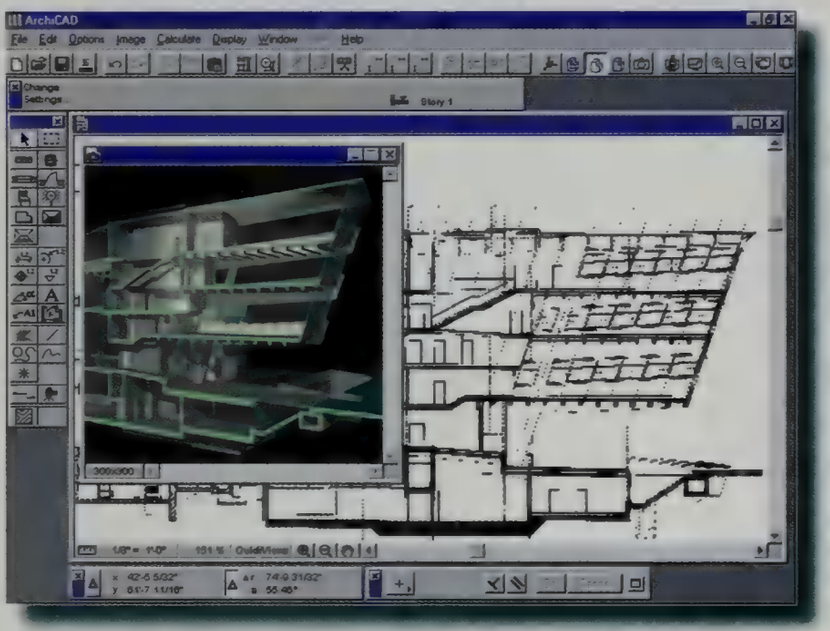


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(Briefs, continued from page 50)

Graham Gund Architects wins arts center commission Graham Gund Architects of Cambridge, Mass. will design the new $28.4-million Performing and Visual Arts Center for Western Carolina University in Cullowhee, N.C. Competition for the project included Antoine Predock Architect, Hardy Holzman Pfeiffer Associates, and Hammel Green & Abrahamson. The center, to be completed in 1999, will include a 1,000-seat theater and a 250-seat music performance hall.

AIA Names Top Architecture Educator Donlyn Lyndon, FAIA, chancellor's professor and chair of the department of architecture, University of California, Berkeley, was awarded the 1997 Topaz Medallion for Excellence in Architectural Education by the AIA in conjunction with the The American Institute of Collegiate Schools of Architecture.

Eisenman to Design Staten Island museum A new waterfront museum will be a part of the rebuilt Staten Island Ferry Terminal at St. George, N.Y. Both the $32-million terminal and the $40-million museum, new home of the Staten Island Institute of Arts & Sciences, will be designed by Peter Eisenman. Construction will begin in August, 1998, for an opening by 2001.

Philip Johnson's Glass House becomes landmark Secretary of the Interior Bruce Babbitt announced the designation of 14 properties as National Historic Landmarks. Included are Philip Johnson's 1949 Glass House in New Canaan, Conn.; Grand Canyon Village in Grand Canyon National Park, Ariz., a significant example of American town planning in the 1920's; and the 1935-46 development of Greenbelt, Md., the first government-sponsored planned community in the United States. The Glass House was designated as a landmark because it "has long been regarded as one of the premier representatives of Modernism."

Brown's new anthropology museum will be housed in these buildings.



Basketball Hall of Fame names architect Gwathmey Siegel & Associates, with Bargmann Hendrie + Archetype, has been selected to develop the architecture for the $100-million expansion of the Basketball Hall of Fame and the Springfield, Ohio riverfront.

Anna Beha to design Brown U. museum Brown University has retained Boston-based Ann Beha Associates as architect for the Haffenreffer Museum of Anthropology, a $15-million, 38,000-sq-ft museum and education center to be developed in existing buildings—The Old Stone Bank and The Benoni Cooke House in downtown Providence, R.I. The museum will open in 2000.

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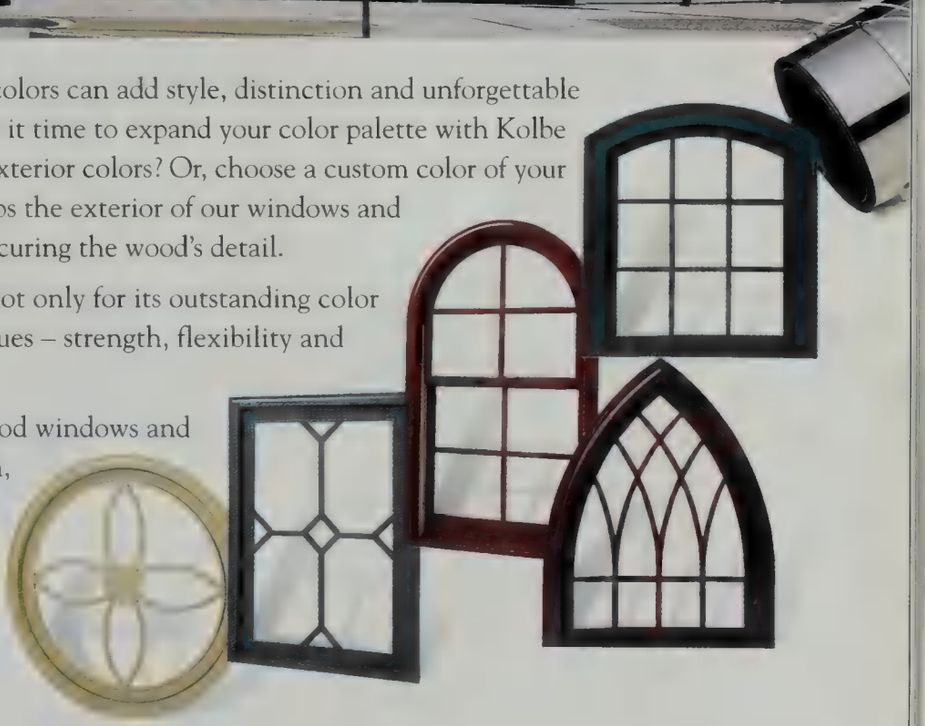




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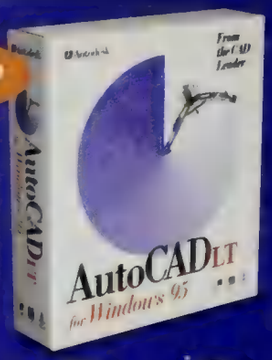
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CIRCLE 31 ON INQUIRY CARD

Record Houses 1997

Houses surely are, as Suzannah Lessard writes in the essay that follows (pages 62-63), "the stuff of dreams." A single-family home is the dream of most Americans and the fantasy of most architects—a way of launching a fledgling career or indulging in a level of artistic experimentation not possible in other work. Even though house projects offer an intimate scale and a satisfyingly high level of detail, many architecture firms both large and small shy away from residential work because profitable house design is no easy feat. Yet as this issue featuring eight houses documents, some of the most talented, sought-after architects of our time continue to devote themselves to designing houses because the commissions are professional "touchstones," and because "they are laboratories of design," we are told. These houses are like portraiture and what often eludes most bystanders to the design process is the actual subject of the portrait. While the architects whose work is shown in the following pages clearly enjoyed some level of self-expression in the houses they designed, the person or people that are truly being expressed are the clients. Houses reveal what clients value, how they live, where they live. In a successful project, the house expresses a resonance between a client and an architect's vision. Houses can be art, but they are always more. Most of the projects presented here are primary residences so they must accommodate everyday requirements, like eating, sleeping, working, and entertaining. These requirements deemphasize whatever trophy aspect there may be to the building program, which often resides more in the public's eye than that of the owner or architect. Clients say that houses can change their lives—sometimes in subtle and unexpected ways. They are a backdrop to life's big and small events, but they can become almost like family members too—with their own blessings and peccadillos. Most clients don't set out to commission a masterpiece, but all agree that good design would help make their home a better place in which to live. Surely people's dreams are varied and highly personal. What seems like a visual nightmare to some is another's secret fantasy realized in three dimensions. But in this dream world of custom-designed houses, the architect weaves it all together.

—Karen Stein

The houses featured in this issue are by:
1. Morphosis
2. Rick Joy Architect
3. Tod Williams Billie Tsien and Associates
4. Susan Rodriguez, Architect
5. Scogin Elam and Bray Architects
6. Krueck ■ Sexton Architects
7. Mockbee/Coker Architects
8. RoTo Architects



Dream Houses

by Suzannah Lessard

The dictionary of dream images that my son gave me for Christmas tells me that the appearance of a new house in a dream indicates a busy social life. Of all the possibilities of what a house might represent in the emotionally charged language of dreams, a busy social life is far down my list, though maybe at the top of Martha Stewart's. Houses are so promiscuously and personally allusive that the task of codifying their dream meanings is surely futile. But they are, undeniably, the stuff of dreams. Indeed they exist in our lives as a kind of waking dream, highly symbolic presences in the midst of ordinary life, metaphors of inner being and fables of historical eras at the same time. Houses above all reveal the unseen. The body is the temple of the spirit and we construct temples for the body that enclose it in an expression of the spirit. Through a variety of subtexts, houses reveal to us the character of our souls.

The houses that I know of that best historically represent a busy social life above all are the palatial "cottages" at Newport built for the robber barons of the Gilded Age. These edifices consist entirely of spaces for social life with virtually none—other than bedrooms— for intimate family life. Thus in their very opulence they convey nightmarish deprivation. Nor is it possible to imagine being alone in them comfortably. Tess Oerlichs, who owned Rosecliff, ended up alone there, but out of her mind, babbling all day to imaginary guests.

In contrast, nineteenth century middle-class houses are often pleasingly complete representations of the varied facets of life. Social life is affirmed in formal rooms for receiving and entertaining, but so is an almost mythological sense of a familial inner sanctum—patriarchal in nature, fiercely guarded by the more public rooms. These houses also project a proud, complacent sense of membership in a social establishment, and yet there is usually at least one room—a study, for example—that encourages solitude. Separate bedrooms for spouses, frowned on by us as evidence of an unwholesome puritanism, may also have protected the need for solitude from the constant proximity of married life.

There is also about the nineteenth century house a pervasive assertion of the authority of society imposed on the individual, a kind of imperium of conventions laying claim to all quarters of the human spirit. Even rooms for solitude can seem to be dictating what sorts of thoughts and activities are expected of the solitary person: the paterfamilias reading in his study, the wife in her boudoir writing a letter in a fine hand. In this inclusiveness, the feeling of the nineteenth century house can be oppressive, which brings us to another kind of subtext, the house as a metaphor of the psyche, and its struggle for emancipation from the influences of familial and institutional life.

. . . CONTEMPORARY HOUSES ARE ACTUALLY NEW AS WELL AS AFFIRMING NEWNESS . . .

Historically, servants quarters are clearly a part of the imperium of convention, and to us a particularly obnoxious one. And yet, lifted free of that context, they can also offer images of alternative secretive realms

Suzannah Lessard, a former staff writer for The New Yorker, *wrote the book,* The Architect of Desire: Beauty and Danger in the Stanford White Family.



outside the tyrannies of civilization. Often one is not led, by the structure of the house, to expect those back staircases, and warren-like bedrooms: indeed to stumble on them can be a surreal experience. Where in an historical context, the pinched austerity of servants quarters reflect oppression, as metaphorical spaces they can represent freedom. As spaces that are hidden away, and therefore metaphorically outside the authority of accepted consciousness, they become rooms in which the ldest imaginings are unimpeded, rooms of the true self, rooms hostable to revolution.

For my high school years I attended a convent boarding school at was housed in a nineteenth century mansion in which the servants arters were used as cloisters, or the nuns living quarters, and protected,

. . THEY EXIST IN OUR LIVES AS A KIND OF WAKING DREAM, HIGHLY SYMBOLIC PRESENCES IN THE MIDST OF ORDINARY LIFE, METAPHORS OF INNER BEING . . .

erefore, by the most powerful of taboos. The heady guilt of breaking o that forbidden sector, structurally and emotionally off the blueprint consciousness, probably heightened an impression of it as both elecally intimate and also elemental. Far from reflecting deprivation, the in rooms in this context were vibrant with personal intensity. They resented to me a rarified essence of life—the contemplative vision—t is hidden in the foursquare explicitness of the mundane.

In our time we value openness. The modern style of living rarely nerates a sense of a fiercely guarded inner sanctum of family life: rather tend to imbue the entire house with an atmosphere of comfortable nily living into which we casually invite our friends. Even those of us o live in powerfully inflected and hierarchical nineteenth century aces have adapted them to modern imperatives, taking down walls, talling kitchens in dining rooms—for in our world the hostess is usuy the cook—opening up attics and basements as well as the servants arters—drawing all the richly metaphorical hidden away spaces into eryday family use. The swags in the plaster, the stately measurements of oor become architectural daydreams of another time, a form of mem- in the house. Memory, however, is an important dimension of the nstruction of consciousness. It's an entirely different matter to live in a use with no representation of memory at all.

In most contemporary houses, the family realm triumphs altoher, and yet the environment is studiously undynastic and ahistorical. ere is no expectation built into it of generational continuity: no expecon of memories, even. The primary message of the contemporary use is that here is a clean slate. Do these houses in their honesty and rity also say that in these spaces spouses change, new sets of children ear? The message of emancipation is directed primarily to the indiual. The open, light-filled spaces say you can be whoever you want to you can think, whatever you want to think—right now, in this ment. Connected to neither past nor future, the contemporary house n environment of the purely personal present moment, a kind of tent, though even a tent is more of an enclosure (an interior) in a way, than these structures in which air and light often appear to be the principal materials. At its best the ethereal austerity of the contemporary house can affirm both revolutionary freedom and contemplative intensity, according what was once subservient or cloistered center stage.

All this could have to do with the fact that contemporary houses are actually new as well as affirming newness—that they have not yet acquired the complex allusiveness that comes with a patina of age. But the matter of newness in houses is not at all a simple one. I once moved an eighteenth century classical New England cottage to some property I owned from a town 25 miles away and out of this project arose a kind of parable, another form of meaning that belongs in the lexicon of houses. In preparation for moving, the roof of my house was taken down, the body cut in half and the large central chimney disassembled all to be placed on a new foundation that awaited it. And so, it was old, by the time it sat on its new site, it held no secrets and sequestered no ghosts. There were, I knew, no doubloons buried in the hearth. If for a moment the swirls in the old glass led me to imagine that I was cocooned in the protective presences of the past—that I was not alone—a trip down to the new-poured basement rudely jarred me out of that notion. There I could see the new heating ducts, the new plumbing, the new wiring sending their tentacles out into the unseen recesses of the house and the floor expertly graded around a modern drain.

I later rented the house to a family who needed a place temporarily because their own house in a development nearby had burned down. It had been a typical suburban ranch, much like those around it—the insurance money allowed them to break out of the mold and build the house of their dreams. They chose a contemporary style, a radical departure in their world. The combination of the destruction of their old life, and the stylistic iconoclasm of the new one led the wife to have a sense that she had been severed from her past absolutely—so much so that, she told me, some primitive part of her had wondered momentarily whether she could dial the numbers written in a phone book that had survived the fire and actually reach old friends. She found this sense of psychic severance was both terrifying and liberating until her chores took her down to the basement—the old basement, untouched by fire or the new design. There it all was, exactly as it had always been—the tools on the wall, the coiled hose, the pile of broken furniture, tricycles—her old life, intact.

The parable of the basements is that there is no such thing as a new house because we are not new—only a baby is new: we bring to any house the debris of a lifetime. On the other hand, the history of our enclosure notwithstanding, we are on our own in the thin new contemporaneity of our disconnected lives.

And yet houses are the essence of connectedness individually and in archetypal ways. They are the forms within which we enact the rituals of life that link us in common humanity. Every house is the five year old's drawing: door, windows, tree, sun. It is also the ruined mansion lost among trees and overgrown gardens, in whose grand rooms which vagrants have built fires under falling plaster, the roof half caved in. Every house is the mere frame, just up, the new wood fragrant, the snowflakes drifting through. ■





Landscape and building interlock in a house by MORPHOSIS for a couple who lost their previous home in a fire.



Charred remains of their 1,400 sq-ft 1960's ranch house were what greeted the Blades on their return from a business trip (below right). Morphosis was charged to create "something brand new" (left and opposite).

by Karen Stein

In mid-June 1990, Vickie and Richard Blades went on a brief business trip to Chicago. When they returned to Santa Barbara, California, their home of 13 years, and everything in it, was gone, destroyed by a fire that ravaged some 500 structures in their idyllic ocean-front community. In fact, their 1960's California ranch-style house, complete with a cementious Class A fire-rated roof recently installed by Richard Blades himself, had exploded. Ironically because of its fire resistance, the roof trapped heat and, in effect, turned the structure into an oven, with temperatures inside reaching 8,000 degrees Fahrenheit.

After surveying the charred remains, the Blades contemplated moving out of town, outside California, somewhere far away. But as their shock subsided, they decided to build again on their Santa Barbara property. "We realized that we were attached to the place, no matter what house was there," explains Richard Blades.

Unlike neighbors who quickly put up facsimiles of their previous homes, the Blades decided to build something completely different. "When you have nothing, it's a clean slate," says Vickie Blades. The couple's search for the appropriate architect eventually led to the Los Angeles-based firm Morphosis. "We liked what we saw," remembers Vickie Blades after the couple studied a monograph of the firm's work and visited the Morphosis-designed Crawford house in nearby Montecito. Following "a mutual interview process," the couple hired the firm, led by Thom Mayne, to create what Vickie Blades calls "a house that didn't previously exist."

Mayne, who likens his ongoing series of projects to "branches of a [single] tree," immediately took to his clients' notion of charting a new direction. Also, it motivated his own three-dimensional critique of the Crawford house, which was designed in the late 1980's during his long-term partnership with Michael Rotondi. (Mayne and Rotondi dissolved their partnership and Rotondi now has his own Los Angeles-based firm, RoTo Architects, also featured in this issue.) Mayne says that the split with Rotondi accounts less for the difference between the Crawford and Blades houses then for design lessons learned along the way. "The changes [in the architectural practice] are not within the formal realm, but in my [newly active] role with the client," explains Mayne. While he and Rotondi sought to make the Crawford house what he calls "an anti-villa"—dissolving a formal distinction between house and landscape—he now says of the project, "strangely, it's an object."

For the Blades, Mayne returned to his idea of fusing outside and inside, but this time, he says, he sought to join landscape and building by "operating" on the site, a strategy aided by the site's clear need for renewal. As a result, the 5,700-sq-ft structure burrows into a gentle hillside, while a lap pool winnows its way beneath the jacked-up north end of the main volume, and curved concrete walls puncture the building envelope to make indoor and outdoor "rooms" that have no obvious beginning or end.



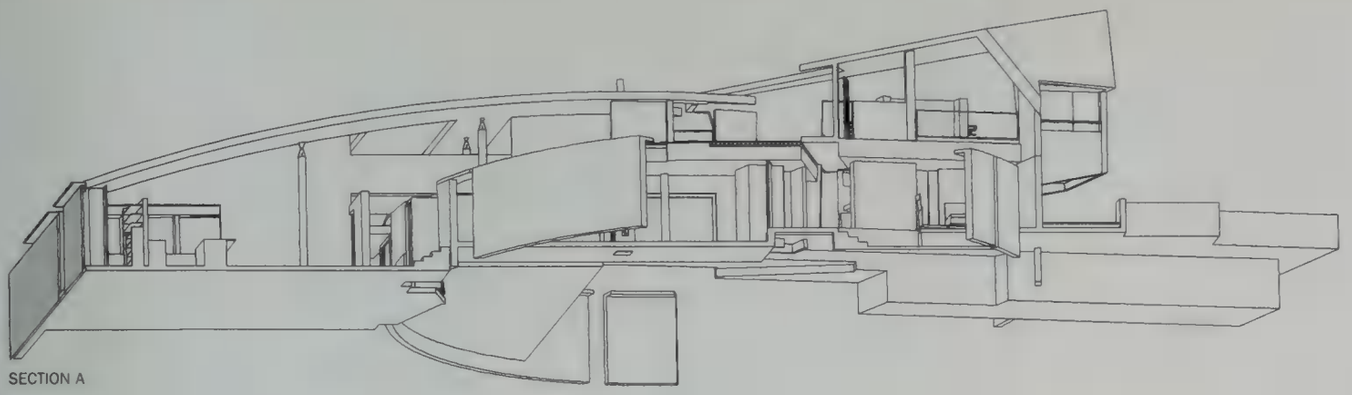
Project architect Kim Groves reports that the Blades didn't want the house to have rooms in the traditional sense, instead asking Morphosis to make spaces that "bleed" into each other. However, Richard Blades, a steel, glass, and bronze artist, did want a separate gallery to display his work and the work of like-minded colleagues. The main living spaces are contained within an approximately 100-ft-long by 17-ft-wide rectangular loft-like box set into site contours, and rising at its apex to 15 ft high. The gallery, with its own mezzanine loft for art storage, occupies a separate box to the east and is connected by a narrow hallway. A second-floor study, *(text continues)*

Project: *Blades House*
Santa Barbara, California
Owners: *Richard and Vickie Blades*
Architect: *Morphosis—Thom Mayne, principal-in-charge; Kim Groves and Mark McVay, project architects*
Engineer: *Joseph Perazzelli (structural)*
General Contractor: *Froscher Lewis, Kirk Lewis*

A painted metal standing seam roof juts out over the north side of the master-bedroom suite (above) and the second-floor study cantilevers over the pool to comply with the clients' request for shade (right). Redwood strips line the street-front south-facing wall and the recessed entrance (below), like a protective wrapper for the volumes of stucco and acid-washed galvanized metal.

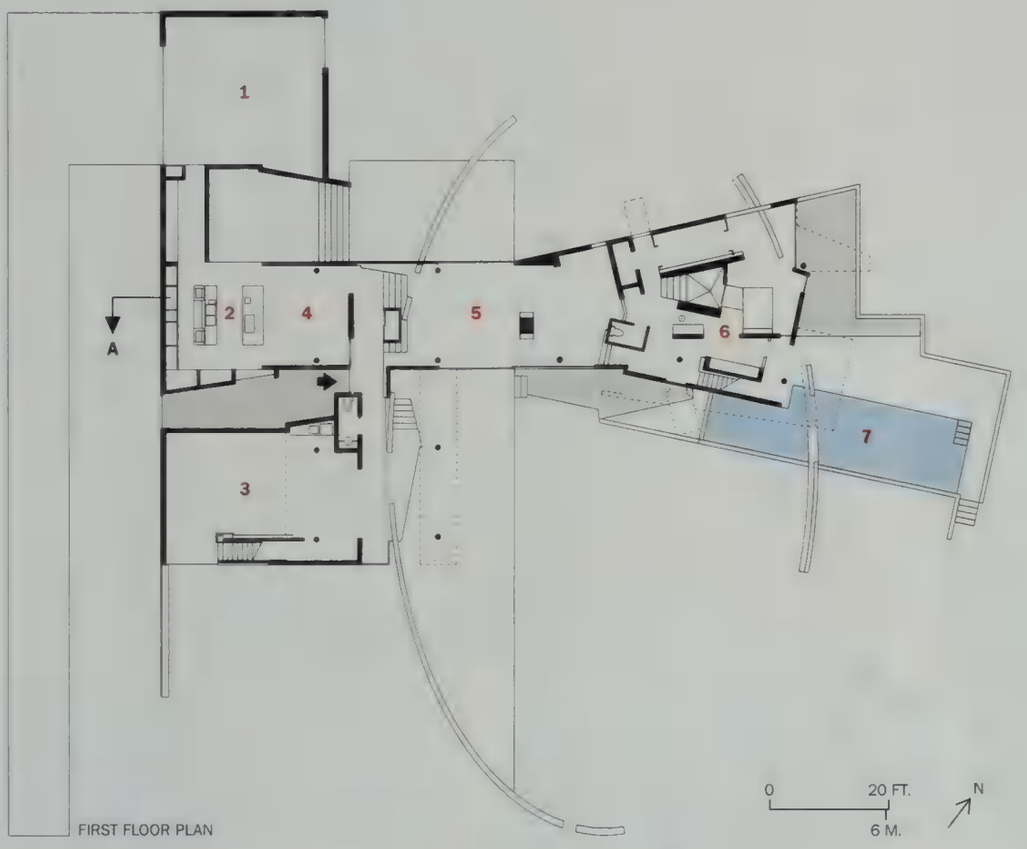






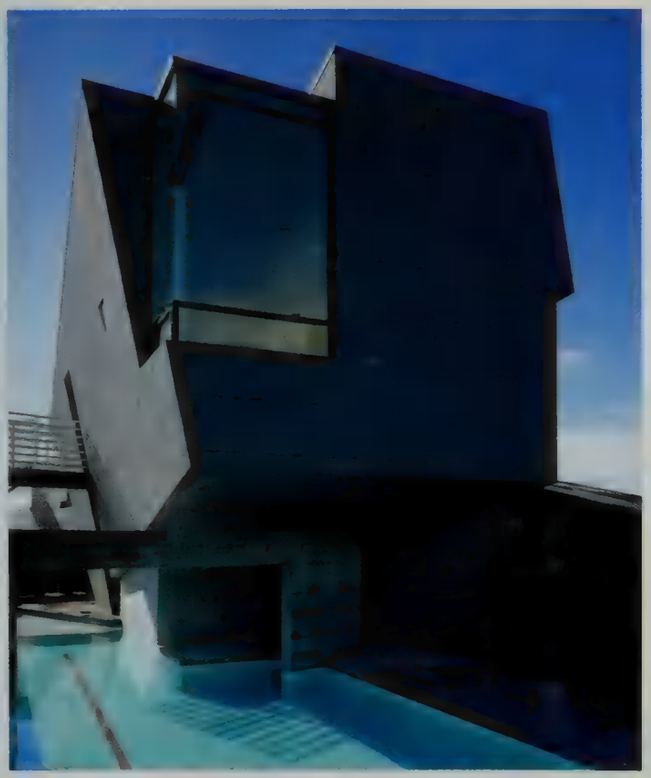
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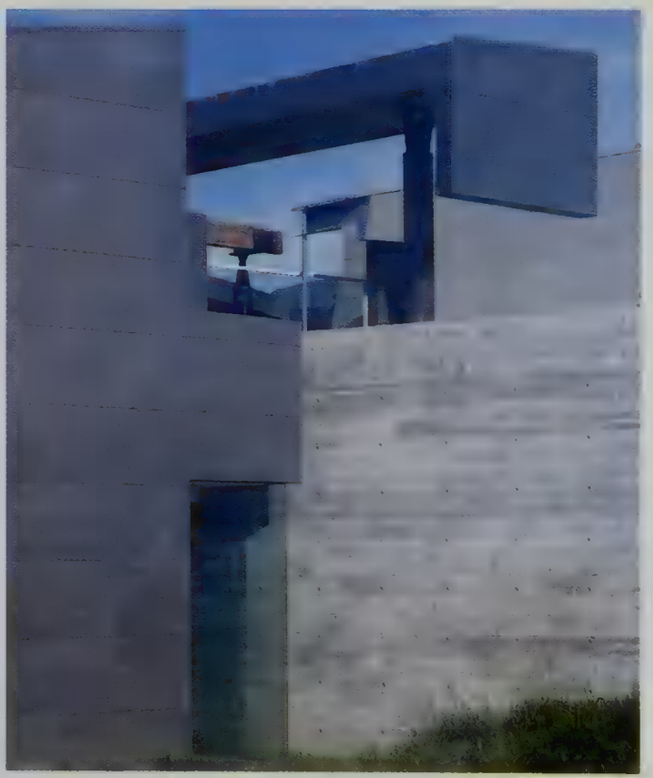
1. *Garage*
2. *Kitchen*
3. *Studio/gallery*
4. *Dining room*
5. *Living room*
6. *Master bedroom*
7. *Pool*



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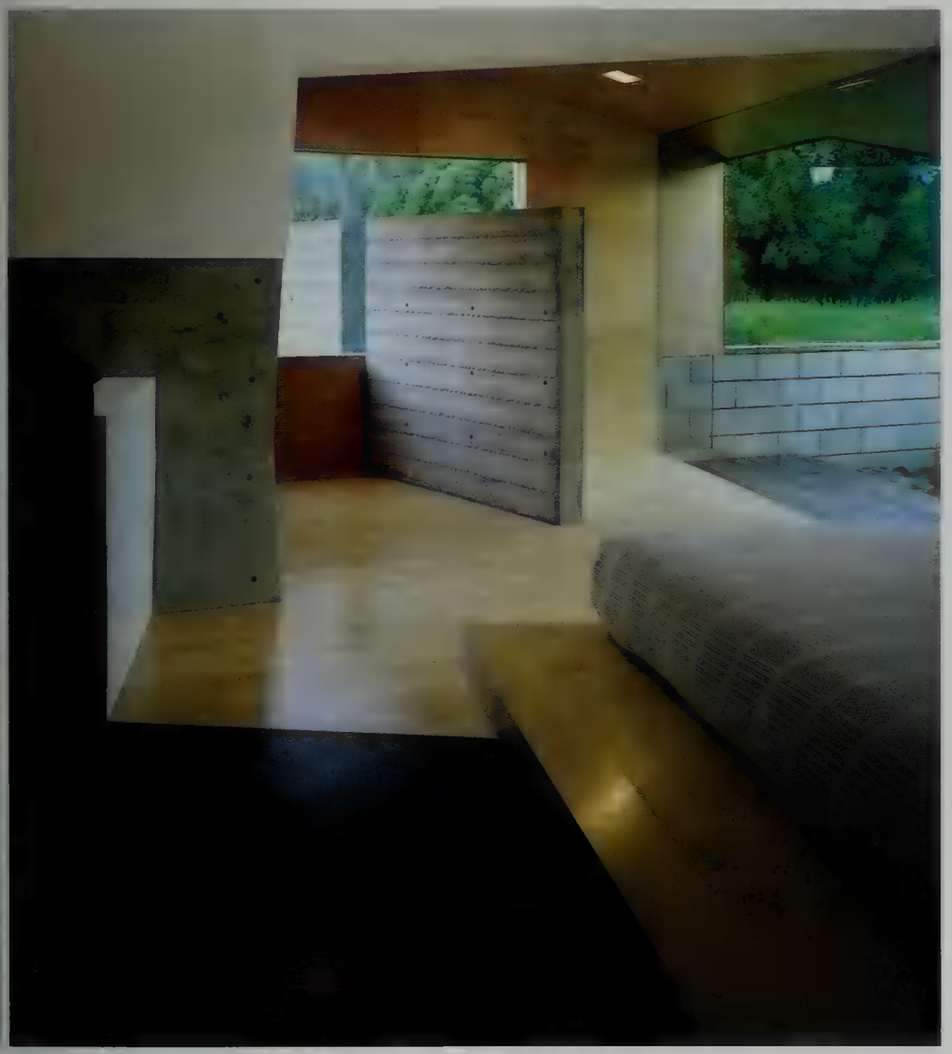
Outdoor and indoor volumes overlap, interlock, and interpenetrate: Vickie Blades's study hovers over the pool (near right), which appears to flow through the ground floor of the house, while a curved concrete wall slides past a window of Richard Blades's studio/gallery space (far right). The boards of the formwork give the concrete a strong wood "grain."







On entry, the house appears like a loft, with a single uninterrupted space dominated by a fireplace. "Rooms" are implied by steps in volume (opposite). The bedroom (below) overlooks the shower (bottom right) and the swimming pool. Clerestories bring light in from above and project beguiling patterns on blank walls (top right).







cantilevered over the bedroom is Vickie Blades's retreat and, observes Groves, it's like a "bird's head poking out from beneath its wings."

While the reference hints at the more relaxed geometry of this design compared to the Crawford house and other previous works' complex linear procession of solids and voids, the dissolution of boundaries between outside and inside remains, in Mayne's view, partly unrealized.

WALLS PUNCTURE THE BUILDING TO MAKE INDOOR AND OUTDOOR ROOMS WITH NO OBVIOUS BEGINNING OR END.

He had planned additional architectural and landscape strategies to further emphasize a sense of collapsed space, including a metal line that would bisect the floor of the house, and continue outside on both sides as a slight depression in the earth, which would be filled with gravel to match the interior ground plane of concrete (see floor plan on the preceding spread). For now, that aspect of the project remains incomplete.

Though a sense of sliding planes and borrowed views pervades the interior of the house, metal siding and a street-front redwood slat wall with only a narrow opening gives the exterior an opposing image, one of impenetrability. But instead of an actual bunker that would seem to provide the Blades maximum fire protection, by opening the house to the yard through large operable planes of glass that provide added means of heat or pedestrian escape, the architects have made a building that is more truly protective. What's more, the Blades appreciate the shifting image of their house from protective cocoon to environmental lens, which is only heightened when the sun goes down. "The biggest surprise is at night," says Vickie Blades of the overall effect. "The slanted wall opposite our bed is like a movie screen with a light show." For all of its special effects, for Mayne, "The building is still very much an object." Mayne seems dedicated to pushing even further his vision of architecture imbedded in its site. Of residential work currently in design, he says: "We're going back [to try] again." ■

Manufacturers' Sources

Painted-metal roof: *Copper Sales, Inc.*

Anodized aluminum windows: *Metal Window Corporation*

Blue-green glass, skylight glazing: *Libbey Owens Ford*

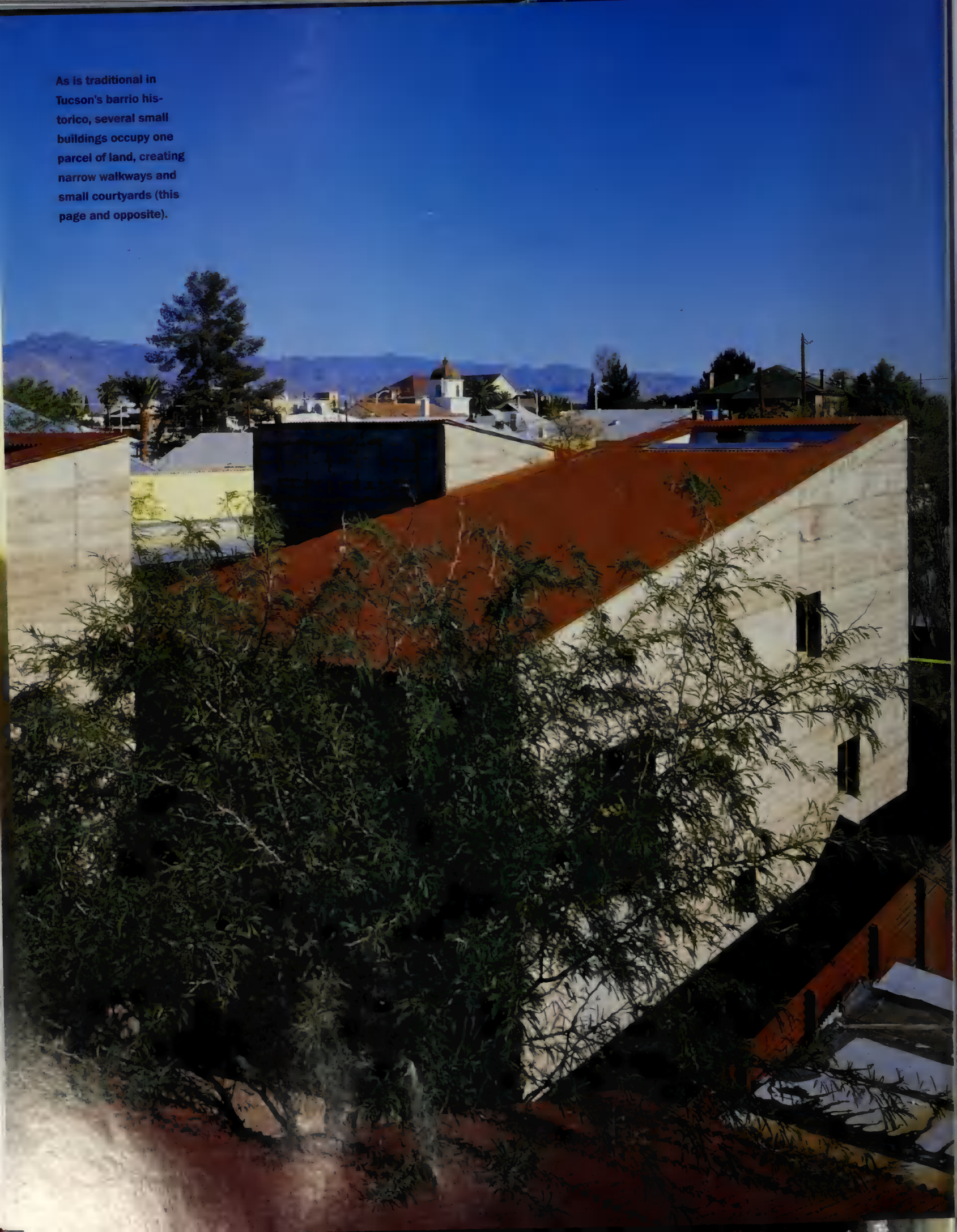
Steel doors: *Custom by architect*

Interior light boxes: *Custom by architect*

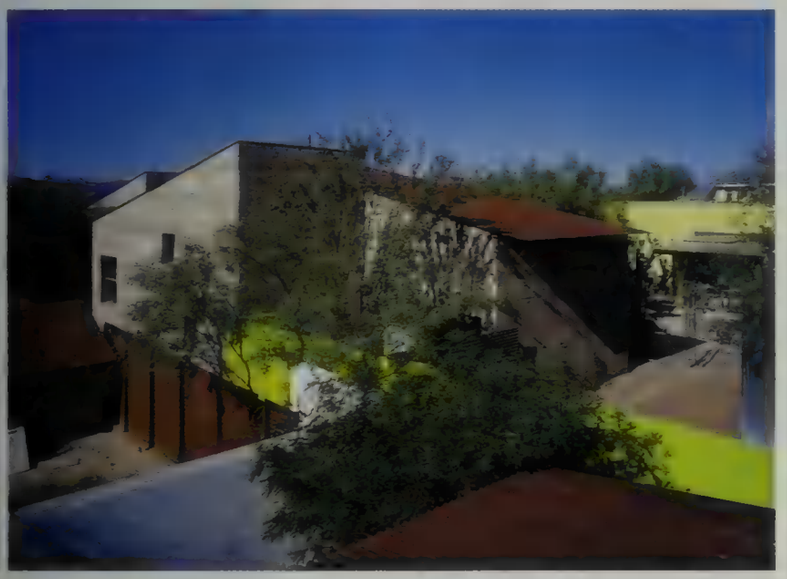
Custom steel plumbing fixtures in master bathroom: *Fabricated by Tom Farrage*

Bathroom valves, faucets: *Grohe*

As is traditional in Tucson's barrio historico, several small buildings occupy one parcel of land, creating narrow walkways and small courtyards (this page and opposite).



In Tucson's historic barrio, RICK JOY designed the Convent Avenue Studios to emulate but not copy their neighbors.



by Clifford Pearson

We didn't want to fake anything," says Rick Joy of the three small houses he designed and built on a narrow lot in the *barrio historico,* the 19th-century Hispanic heart of Tucson. So instead of trying to copy any of the styles found in the barrio, he designed new buildings that are "of their own time" and restored a fourth that is a small adobe house or *casita*. By understanding the forces that shaped the old buildings in the area—such as the desert climate and simple building materials—Joy created a group of houses that respects the historic setting: "I wanted to create a romantic place, not a nostalgic one."

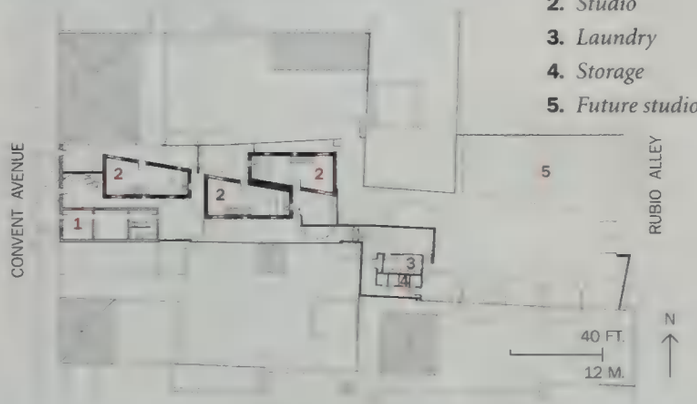
When he started work on the project, the old *casita* in the southwest corner of the site was in danger of collapse, a fate that had already befallen its two neighbors to the north. The architect inserted a new stone foundation for the *casita* (which had previously rested directly on the ground), resurfaced its adobe walls with traditional lime plaster, and added new mechanical services as well as a new bathroom and kitchen. The only remnant of the other *casitas* on the property was an adobe wall fronting on Convent Avenue, which Joy restored as a freestanding element. What had been entrances to the two old rowhouses now serve as gateways to the project's front courtyard.

All new elements are clearly identified by either color or material. For example, new concrete-block walls running through the site are plastered, then painted lime green, while restored adobe walls are kept white. New mailboxes and gates are weathered steel, which can't be confused with any historic materials. Wherever a new element is inserted into an old one, Joy left a reveal around it so the two eras don't quite touch. Although the Secretary of the Interior's guidelines on historic preservation call for making clear distinctions between old and new, a few members of the Tucson landmarks board questioned the new steel elements inserted in the old adobe. To that, Joy says, "Copying old styles only degrades the importance of the historic."

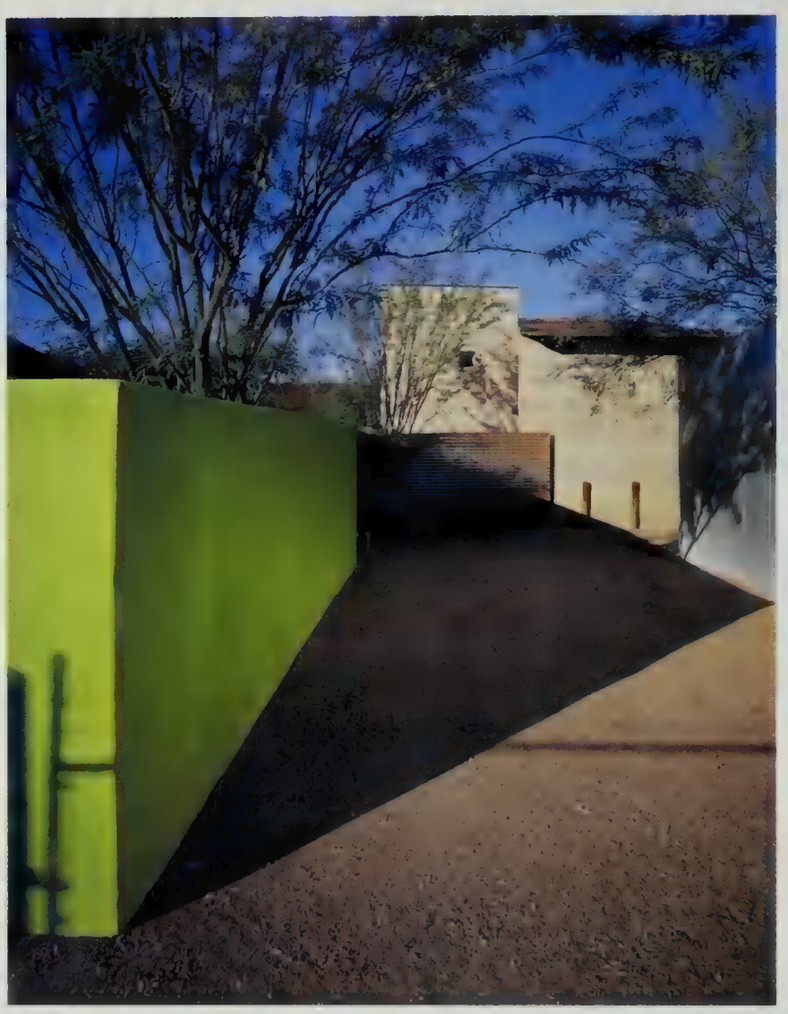
Joy designed the three new live-work studios as rammed-earth structures, as a way of emulating the simplicity of adobe and experimenting with an alternative building system. "I love the monolithic quality of rammed-earth buildings," he says. Made of dirt mixed with a small amount of portland cement that is compacted inside metal forms, these structures are thick-walled buildings that require no reinforcing and no internal or external finishes. Like adobe, rammed earth stores heat from the desert sun and distributes it indoors during the cool evenings when outdoor air temperatures can drop as much as 40 degrees. Rammed earth, though, is more stable than adobe and doesn't require periodic resurfacing. Joy also likes the longevity of the material. "These buildings will last 200 years, so they'll be historic buildings someday."

The long narrow site, which had been vacant for more than 40 years, presented a host of planning challenges. The client, Vancouver businessman Rick Brezer, bought the property while spending a year in Tucson *(text continues)*

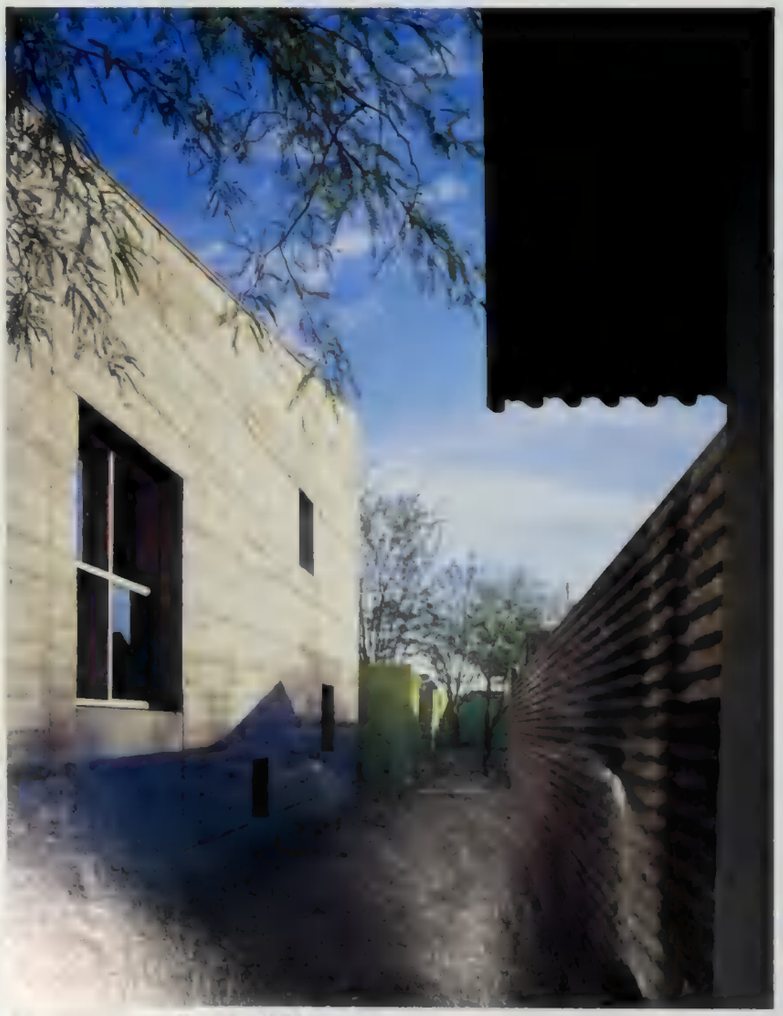
1. *Casita (restored)*
2. *Studio*
3. *Laundry*
4. *Storage*
5. *Future studio*

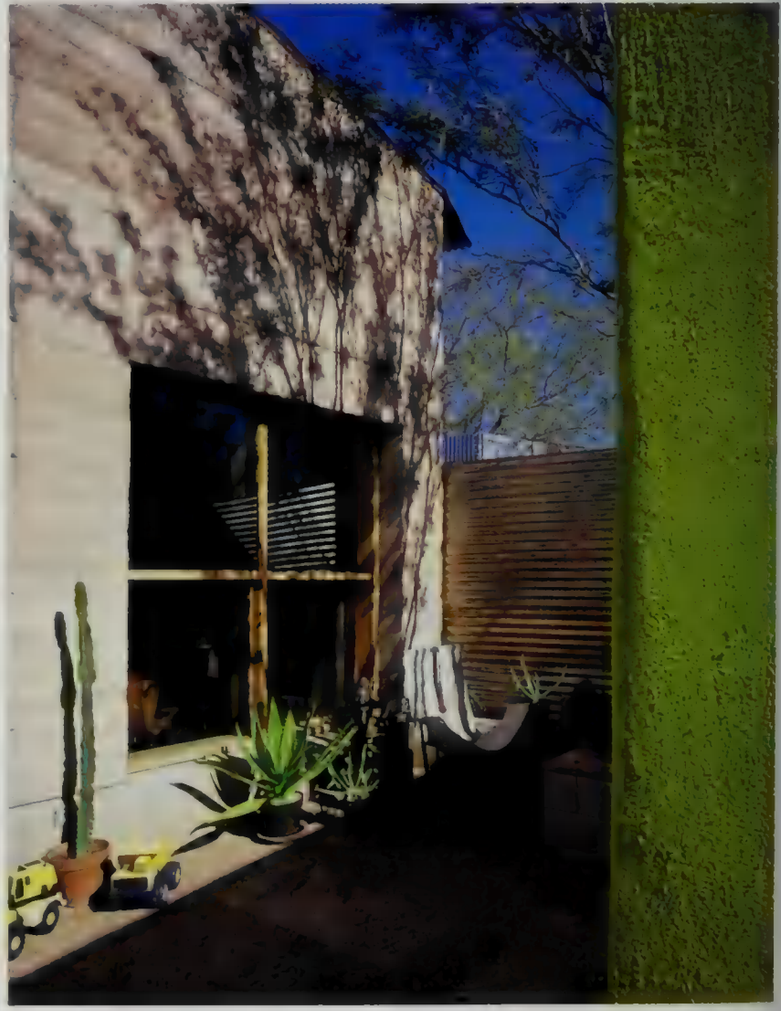


Project: *Convent Avenue Studios Tucson, Arizona*
Owner: *R.J. Brezer*
Architect: *Rick Joy Architect—Rick Joy, principal; Franz Bühler, construction supervisor/carpenter; Holly Damerell*
Engineers: *M.R. Behnejad/Southwest Structural Engineers (structural); Roy T. Otterbein (mechanical/plumbing)*
Builders: *Rick Joy Architect; Quentin Branch Rammed Earth Solar Homes (walls, foundations)*











CONSTRUCTION

Building with rammed earth and restoring with adobe

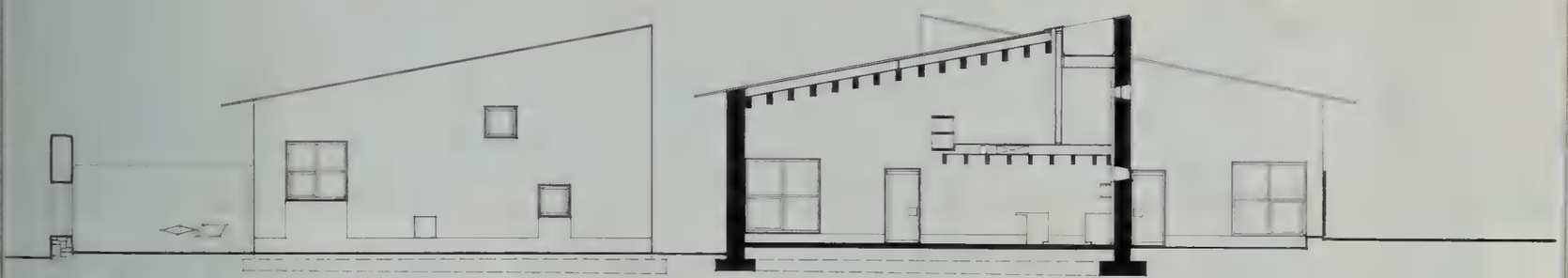
Although rammed-earth construction dates back at least to the Great Wall of China, it is a relatively new way to build in Tucson. With builders looking for more environmentally friendly methods in the last 30 years, rammed earth has been used in the Southwest along with such alternative materials as baled hay. Like the more traditional adobe, rammed-earth structures work well in the desert because of thermal lag—the material's ability to store heat from the daytime and distribute it slowly during the cool nights. But while adobe requires resurfacing every year or so, rammed earth is nearly maintenance-free. And unlike baled hay, which requires a termite shield, steel lathe, and a surfacing material, rammed earth is monolithic.

Most of the walls for the Convent Avenue Studios are 18-in.-thick, though end walls are 24-in. Rammed earth was cast in standard concrete-slip forms in 10-in. lifts and then compacted by hand-held power hammers to 5-in. (photo, above left). Each of the 1,000-sq-ft studios weighs about 180 tons. The earth used here was a combination of soils from three different local sources (to get a gradation of colors) blended with a small amount of red pigment and 3 percent portland cement. Because the walls require no curing, the metal forms with plywood facings can be removed almost as soon as the earth is cast. While some architects apply a stucco or plaster finish to rammed-earth walls, architect Joy wanted to expose the material on both the interiors and exteriors. Openings for doors, windows, and roof beams had to be inserted between forms, because rammed earth crumbles if cut. Local building codes required the rammed-earth walls to sit on concrete stem walls, even though Joy believes this is unnecessary. Concrete is also used below window sills to prevent water penetration.





An old adobe wall (above) was restored as a freestanding entry (top) using traditional lime plaster. Existing openings were used for a new door, gate, and windows.

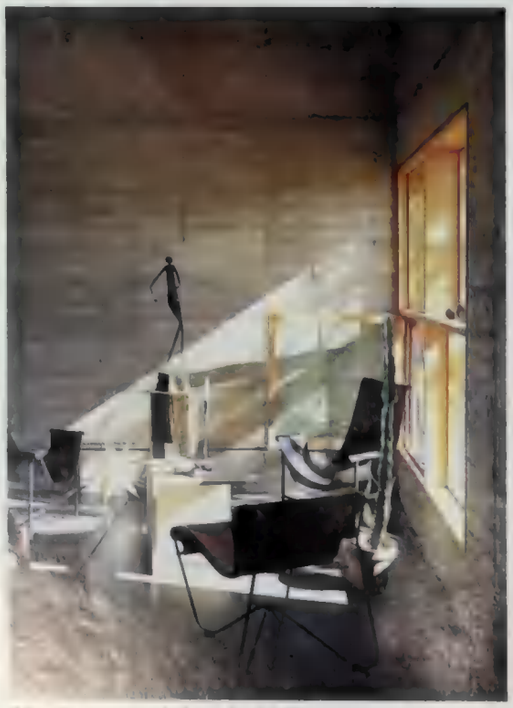


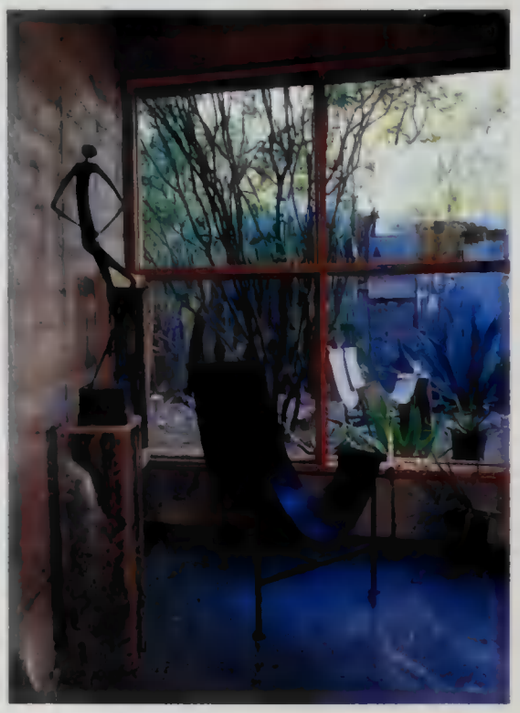
EAST — WEST SECTION

Automobile access to the project is from Rubio Alley in the back of the site (right and opposite top left). Visitors arriving on foot or parking on Convent Avenue enter a front courtyard through a restored adobe wall. The door, weathered steel mailboxes, and window bars are new (opposite top right). A walkway leads past one of the new studios and toward Rubio Alley (opposite bottom left). A private courtyard acts as an outdoor room for one of the units (opposite bottom right). The studios cost about $90 per sq ft to build and each one rents for $895 a month. The restored *casita* rents for $595 a month. Each unit is equipped with a heat pump to help when warmth held in the rammed-earth walls isn't enough.



The interiors of the studio are all about controlling the amount of sunlight that comes in while providing views outside. A private courtyard (bottom right) serves as an outdoor living space.







without knowing exactly what he would do with it. "I fell in love with the neighborhood—the colors, the nature of the materials, the feeling that this is a well-grounded place," explains Brezer. A neophyte developer, Brezer called on a number of recommended architects in Tucson to discuss what could be done with the property. Not satisfied that he had heard the right answer, he picked up the Yellow Pages. That's where he found Joy, whose office happens to be on the same street as the property. After one meeting with Joy, Brezer hired him. Brezer liked the boldness of Joy's work and also that he builds what he designs. Together, client and architect developed a program for three 1,000-sq-ft live-work studios that could be rented to artists and young professionals.

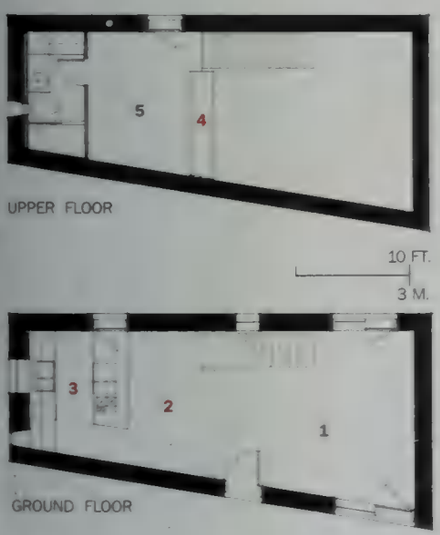
Starting with simple shed forms that could fit like jigsaw pieces on a small parcel of land, Joy developed a wedge-shaped plan for the houses. "We wanted a small kitchen and bathroom and a larger living area," says Joy, "so we got a wedge that's narrower at one end and expands at the other." The wedge also opened up outdoor spaces between units that could be used as private courtyards. Although building codes allowed the architect to place the houses along one property line, Joy set them back to allow north- and south-facing windows and to create the courtyards. This scheme also maintained sun access for houses on adjacent properties, helping to earn the goodwill of neighbors.

Walking through the project, from the freestanding adobe entry wall on Convent Avenue to a new wood-frame, rolled-steel-clad laundry building that all the tenants can use, visitors pass a series of shared and private outdoor spaces recalling old parts of Southwestern towns. Mesquite trees and creosote bushes salvaged from other sites are planted throughout the project, while old corrugated metal is used for a perimeter fence. Dirt, gravel, and old stones are the main paving materials.

Inside the houses, the 18-in.-thick rammed-earth walls are the dominant feature. Complementing the simple beauty of the walls are rough-sawn Douglas-fir roof beams, concrete floors, fir ceilings and windows. "We used wood only where it could be experienced," explains Joy. Sunlight is treated as a precious commodity, almost totally blocked on the east and west, and brought in through a narrow skylight above the bedroom and through windows that frame tight views of courtyards. In a place like Tucson, a little sunlight goes a long way.

Because the walls are such powerful elements, Joy wrestled with how to detail the houses. Standard door handles and windows would have looked weak next to the rammed-earth enclosure. In the end, he decided the best approach was to keep the details simple but strong—like square steel door pulls, rough-hewn wood windows, custom-made red-birch cabinets. "Restraint is a big part of what I'm doing," states the architect. ■

Manufacturers' Sources
Glass: *PPG (Solex); Monsanto (Saflex laminated-glass interlayer)*
Exterior latex paint: *Dunn Edwards*
Hardware: *Schlage Lock Co. (dead bolts); Lawrence (hinges)*
Furnishings: *Max Gottschaulk (Pretzel chair, "K" bar stool and dining chair); Giorgio Bellolli (sling chair)*
Cook top and oven: *G.E. (Monogram)*
Refrigerator/freezer: *U-Line*



1. *Live/work*
2. *Dining*
3. *Kitchen*
4. *Storage*
5. *Sleeping*



To make the 1,000-sq-ft studios as efficient as possible, Joy designed built-in shelves and cabinets for the kitchen (right) as well as the sleeping loft.





The limestone face with heavy-picked finished accents is, according to zoning mandate, at the property line. A glass "cornice" admits daylight to upper bedrooms and the center of the townhouse.

PHOTOGRAPHY: ©MICHAEL MORAN

Family home or Modern icon? WILLIAMS AND TSIEN do both at once.



by Karen Stein

I have a friend, an architect, who is obsessed with this house. My friend, let's call him Bill, lives near it on New York City's Upper East Side and since construction began on the building in June, 1995, has monitored its progress with an attentiveness surpassed only by its owners and its architects, Tod Williams and Billie Tsien. For Bill, the house represents a victory of sorts over the momentum of city politics and client taste that would seem to necessitate a historicist design in such a venerable "uptown" address. That the house is so obviously Modern—it is, in fact, just outside the restrictive limits of a New York City Landmarks district—is more than a triumph to him: it's a beacon of change, in that something forward-looking is comfortably and not aggressively at home in the most old-world of the city's neighborhoods. Good student that he is of architectural history, Bill sees the building within a lineage of two previous Manhattan townhouses, both iconoclasts of their respective generations and now Modernist icons—Philip Johnson's 1950 Rockefeller Guest House and the 1970 townhouse by Paul Rudolph, known by the name of its most famous fashion-designer owner [RECORD, Mid-May 1970, pages 42-45]. "It's the best thing since Halston," claims Bill.

When told of the comparisons, Williams and Tsien are pleased. "They're great buildings," says Williams, noting that the Rudolph, in particular, was an "important building for me when I moved (*text continues*)

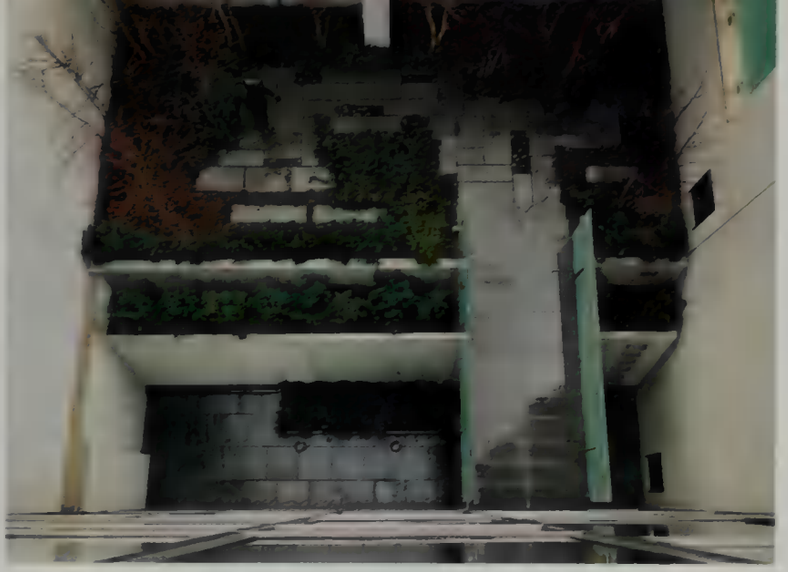
Project: *New York City House*
Architect: *Tod Williams Billie Tsien and Associates—Tod Williams, Billie Tsien, partners-in-charge; Vivian Wang, project architect; Peter Arnold, Christopher Haynes, Matthew Pickner, Marianne Shin, project team*
Architect of Record: *Schuman Lichtenstein Claman Efron Architects—Peter Claman, partner-in-charge; Richard DeMarco, project architect; Pio Graiff, job captain*
Engineers: *The Canto Seinuk Group (structural); Cosentini Associates (mechanical)*
Consultants: *Plant Specialists (landscape); Richard Shaver (lighting); Cerami and Associates (acoustical); Israel Berger and Associates (window wall); Electronic Systems Associates (security)*
General Contractor: *Turner Interiors*



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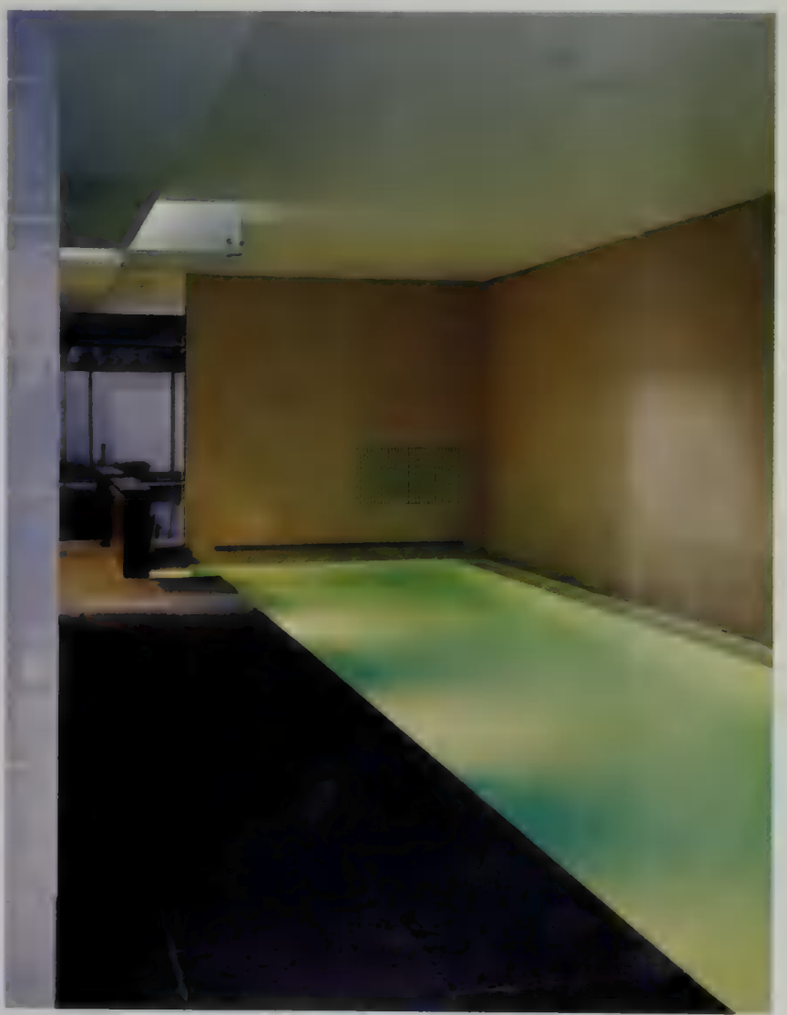


NGITUDINAL SECTION



The south-facing garden (above and below left) steps down from street level to bring light to the underground pool area (below right). Sandblasted glass is used as a railing for the bridge.





The double-height *piano nobile* (above) accommodates such large-scale artwork as a Frank Stella over the fireplace. Williams and Tsien designed rugs and coffee tables. Cherry paneling lines the foyer (near right) and reappears in the kitchen (far right) and family room (opposite left). A skylight illumi- [illegible] stair [illegible] versed [illegible] gs







BASEMENT



FIRST FLOOR



SECOND FLOOR

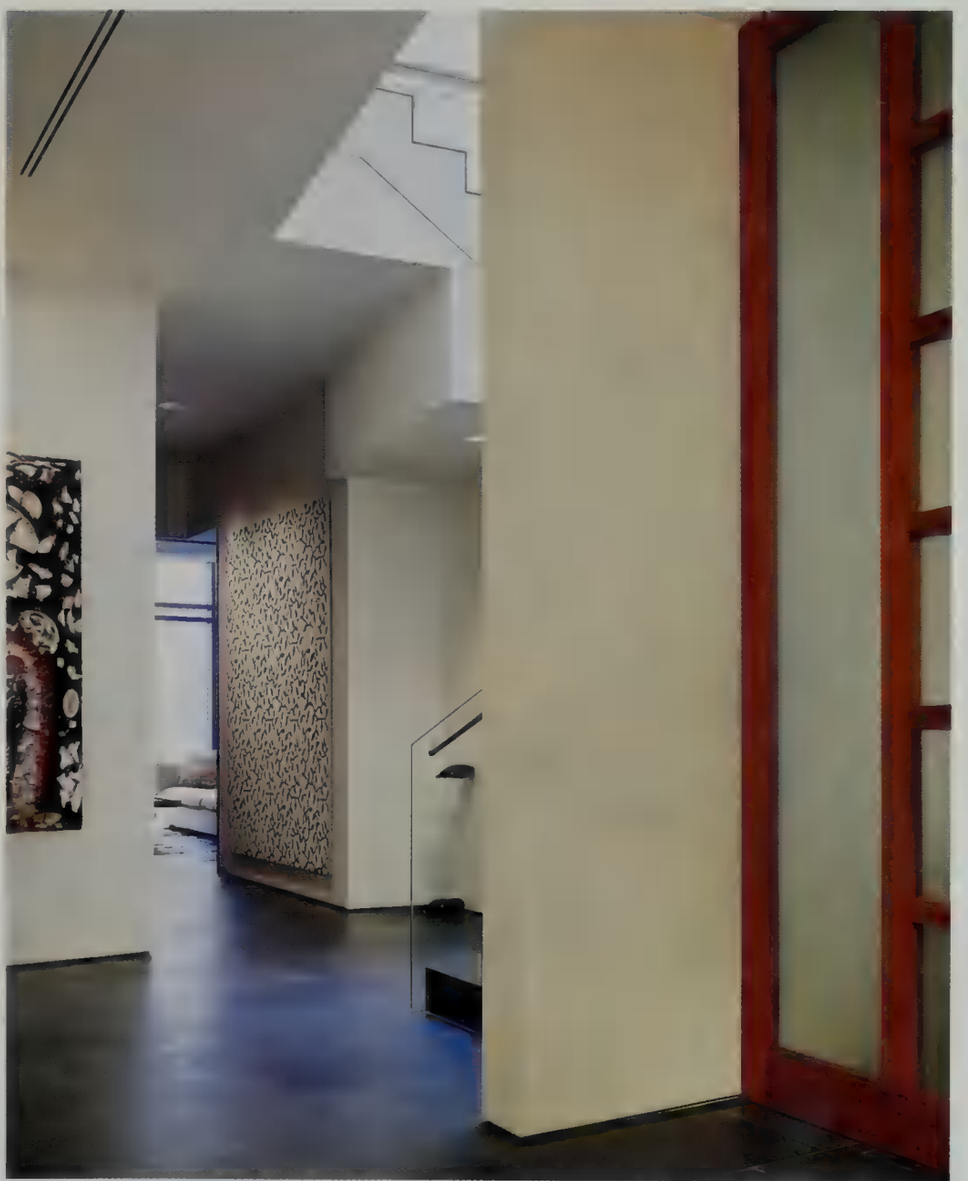


THIRD FLOOR

16.5 FT.
5 M.
N

1. *Lap pool*
2. *Garden*
3. *Laundry*
4. *Mechanical*
5. *Foyer*
6. *Dining room*
7. *Kitchen*
8. *Family room*
9. *Living room*
10. *Study*
11. *Library*
12. *Open to below*
13. *Master bedroom*
14. *Bedroom*







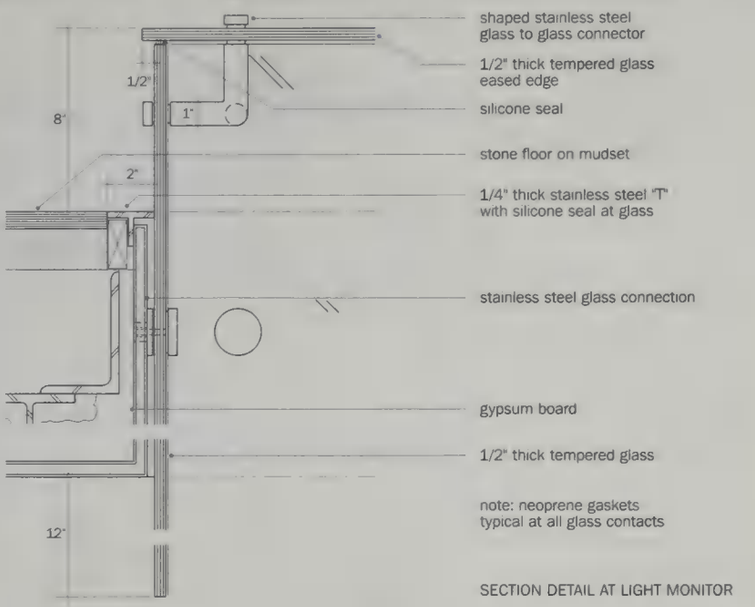
here." The duo are, however, disinterested in its heady implication of design stardom. "We realized we were playing in the big league, where few have succeeded," explains Williams of obtaining the sought-after commission following an interview process that included Johnson himself on a who's-who list of potential architects. Adds Tsien: "You have that realization and then you turn your back on it and take small steps [to complete the project]. You're caught up in the intensity of the relationship with the client." About the public spectacle, says Tsien: "I don't care."

That Williams and Tsien are assertive about their goals yet unconcerned about self-promotion is key to their architecture. It is, in fact, what gives their work its double nature: stature *and* modesty. Their ability to embrace such dualities without sacrificing aspects of either extreme is what won them this job on a public site for a family that wants privacy, says the the wife of the client couple. She says it was their ability "to strike a compromise that offers *all* the options." Perhaps even the dual nature of their practice—two strong-minded designers who don't speak for each other, but with each other (the two give joint public presentations of their work with alternating commentary)—played its part.

Reconciling differences was the main part of the programmatic charge, since each item of the clients' wish list was about mediating the potentially conflicting goals of two equally strong-minded people. Observes Tsien of her clients : "They are very joined and very different." And her client agrees: "My husband and I have radically different ideas about formal [versus informal] living. We wanted it to feel like a loft space, but be nearer [than the SoHo warehouse district] to the [midtown] office," with a "comfortable place for large-scale entertaining, and cozy enough for family living." Also, the clients insisted that the street profile be "a non-event—very quiet without being hostile." Added to the mix is a vast museum-quality art collection—constant only in its scope, primarily works from the 1960's to the present, and large scale: "It gives my husband great pleasure to buy something new and stir things up," says the owner of her spouse's constant shifting of art through the house.

In response, Williams and Tsien devised the concept of a blank front facade—a surrogate surface for art—that penetrates the house literally, reappearing in the center atrium as a backdrop for paintings. For all their unorthodoxy, Williams and Tsien also do play by traditional rules, at times making those rules three dimensional. In composing the front, for example, the recessed entrance meets a zoning mandate since it is 25 percent of a facade that must otherwise abut the street. Its 4-in.-thick limestone plane floats atop a glass and aluminum frame as a conforming street wall. Even the fence around the front garden, which is leased from the Department of Transportation, is strictly regulation. While two brownstones were demolished to make way for the 13,760 sq ft structure, the site's floor-area-ratio would have permitted 34,000 sq ft. Why not sell the property for more profitable development? The owners, like the architects who wanted their house to be framed by taller buildings on either side, showed neighborly restraint. My friend Bill appreciates that. ■

Manufacturers' Sources
Steel beams: *Steel Services Corp.*
Indiana Limestone cladding: *Stone Truss Systems*
Kynar-finished window wall, insulated glass and skylights: *Lynbrook Glass and Architectural Metals*
Exterior muntz-metal clad entrances: *Coordinate Metals, Inc.*
Cherry doors, cabinetwork: *Modern Industries Architectural Woodworking*
Concealed hinges: *SOSS*
Lever locksets: *Omnia Industries*
Paint: *Sherwin Williams*
Kirkstone, Pietra Cardoso flooring: *Domestic Marble and Stone Corp.*
Downlights: *Edison Price*
Rugs custom by architects: *V'Soske*
Couches, chairs: *Nienkamper, ICF, Cassina, Tentazoine, Maralunga*



SECTION DETAIL AT LIGHT MONITOR



Architect of record, Richard DeMarco, who specializes in high-rise residential work, says "every corner was a challenge to maintain the simplicity of finishes and structural integrity." Precision is evident in handrails (left) and the glass box (above and below) that brings light to the pool.





FIDDLEHEAD ISLAND

The cabin is positioned to take advantage of the island's sightlines. The west-northwest elevation has an adjacent deck and large windows that face the summer sunsets and the Leadbetter Narrows, a channel that carries a good deal of picturesque boat traffic.

PROJECT DIARY: On an island of her own, New York City-based architect SUSAN RODRIGUEZ builds the ultimate retreat.



by Charles Linn, AIA

Who hasn't dreamed of living in a house on a private island, a place completely quiet except for the sounds of nature; a place where, isolated from career, telephone, and fax machine, one can feel free from the world? For an architect, perhaps the only way to better this fantasy would be to personally design and build the house. New York architect Susan Rodriguez, AIA, made this dream come true. Her story begins on Vinalhaven, a rugged island in Penobscot Bay off the coast of Maine. Except for the main street and village, most of Vinalhaven is covered with hemlock and spruce trees, and dotted with turn-of-the-century quarries that once supplied granite for projects as distinguished as the Cathedral of St. John the Divine in Manhattan. Many of the island's extremely friendly citizens make their living trapping lobster, and in winter the stacks of lobster pots in their yards are nearly as large as their homes. Families here have roots in the community that go back generations. In the summer, the island's population may double as city dwellers from the entire east coast of the U.S. come to enjoy its coastal scenery and cool climate.

SPRING 1993 Rodriguez and her husband, Charles Lowrey, begin looking for a building site on Vinalhaven, where Rodriguez has spent summer vacations since 1981. In the back of her mind, however, she longs for something even more remote. "After all," she says, "the purpose of coming up here is to get away." A realtor who is showing them property says he has recently appraised a nearby eight-acre island called Fiddlehead, and although it is not for sale, he asks the owner if they might see it.

"It was a cold, crisp day in late March," Rodriguez recalls, "and the snow was waist deep. But we fell in love with it." The owner agreed to meet the couple and over coffee, told them of her experiences vacationing on Fiddlehead since the 1950's. After getting to know Rodriguez and Lowrey, and learning what they would like to do with the island if it were theirs, the owner agrees to sell. In May, the transaction is complete. "We really got lucky," says Rodriguez.

In July, the couple stays on the island for the first time, in one of the two postage-stamp-sized summer cabins that are already on the site. This visit and subsequent treks during the summer profoundly influence Rodriguez when she begins to design her own family's cabin, having experienced the climate, the views of the distant islands and boat traffic, and most of all, savoring the sunsets. "You pretty much live outside during the summer, and you get to see the importance of the passage of light during the day. We never dreamed how beautiful the sunsets would be."

FALL 1993 Back in New York City, where she works as a design principal for James Stewart Polshek & Partners, Rodriguez begins to design the house. Her husband, who is also an architect but works as an investment banker, acts as co-client and critic. "It was a refreshing change of scale for me," she says. "Usually I work in the hundreds of *thousands* of square feet, not the hundreds." In her design, the main cabin is separated from a new guest cabin by a wedge-shaped deck, whose wide end is oriented toward the southwest view; and the long axis of the main cabin with its expansive living room windows is oriented to catch the sunsets. The cabin is built of post-and-beam construction, and certain elements—the roof slope and the wood-shingled siding—are inspired by the existing cabins.

Facing a deadline—new owners must begin building within a year of the purchase of their property or go through the process of renewing their building permits—Rodriguez chooses Clarence Conway to build the house. He is a lifelong Vinalhaven resident, volunteer firefighter, and the owner of his own construction company since 1975. When giving a tour of Vinalhaven in his pickup truck, he seems to have either remodeled or repaired every other house on the island. His experience and resourcefulness are crucial. Rodriguez notes that working with Conway is different from working with a city contractor. "There aren't any bids, really. He gives you a fair price, and then he and his sons work very hard at it." She

Project: *Island Cabin, Vinalhaven, Maine*
Owners: *Susan Rodriguez and Charles Lowrey*
Architect: *Susan Rodriguez, AIA, principal-in-charge; Charles Lowrey*
Contractor: *C.W. Conway and Sons*
Landscaping: *Ames Brothers Forestry Service*



A VOYAGE

Building a cabin on an island presented contractor Clarence Conway and architect Susan Rodriguez (above) with certain logistical challenges, both in terms of communications and in construction of the building itself. Rodriguez, who lives in New York City, and Conway held daily 7:00 a.m. telephone conferences to check progress and exchange questions, and kept their fax machines humming as they worked out details on paper.

All materials for the job, and the two construction vehicles on the site—a backhoe and dump truck—were ferried to the island by a barge. The barge was towed into position by a boat and then anchored by a pair of long vertical pipes, which were driven into the mud. The goods were hoisted off by a small on-board crane. Everything had to be delivered at high-tide, however, even if this meant traveling by the light of the moon, at midnight. Hiring the barge at a cost of $500 per hour meant Conway had to anticipate what materials would be needed and plan loads far in advance.

To speed up construction, Rodriguez chose a post-and-beam frame for her cabin. It was fabricated of hemlock in Bath, Me., and brought to the island when it was surrounded by what she describes as a "pea-soup fog."

The erection crew, specialists provided by the manufacturer, The Shelter Institute, expected that machinery would be available to hoist the frames to their vertical resting places once they had been assembled on the cabin's already completed floor. But no such luck. Instead they improvised, using come-alongs anchored high in nearby trees, and inched the frames into place by hand. The crew finished putting it up in two and a half days. "The crew was very ingenious in the way they improvised the rigging," says Rodriguez, "and I was also really glad we left a lot of trees close to the cabin."





gives him a 1/4-in. scale cardboard model to help explain details of the cabin's structure that are not so easily understood from the drawings.

The cabin will be of hemlock post-and-beam construction and its infrastructure will be contained entirely on the island. Well water and rain collected from the roof will be stored for use as potable water. Sewage will be collected in a holding tank and pumped to a septic field periodically. Propane will be the only imported source of energy, fueling the generator, water heater, lighting, and refrigerator. When necessary, heat is provided by a wood stove. "Everything was designed with the idea of no maintenance," Rodriguez says, "because when you can't be here all the time, the last thing you want to do is worry about fixing things up."



SUMMER 1994 Materials and construction machinery are delivered t the island at high tide on a barge towed by a boat. Meanwhile, the Ame Brothers, a crew of local foresters, clear a rough access road from th shore to the site, then the site itself, and install the septic field. "The leach ing field went in first," says Rodriguez, "because we had to know it woul work before we went ahead and built the house."

After the cabin footprint is laid out, Conway and his crew dri steel pins into the granite shelf below so that the concrete foundation ca be anchored. The surface of the rock, while solid, is so irregular that a one point the crew must drill through 16 ft of hardpan before hittin rock, while at other points the granite is exposed. After the foundation poured, they build platforms of pressure-treated heavy timber set int custom-made stainless steel shoes so that the post-and-beam contracto can assemble and raise the timber posts and trusses that will frame th cabin. "The frame went up so fast, it was like a barn raising," sa Rodriguez. "I felt we had really made the right decision to go with pos and beam frame, since this would allow the work to go on much faste

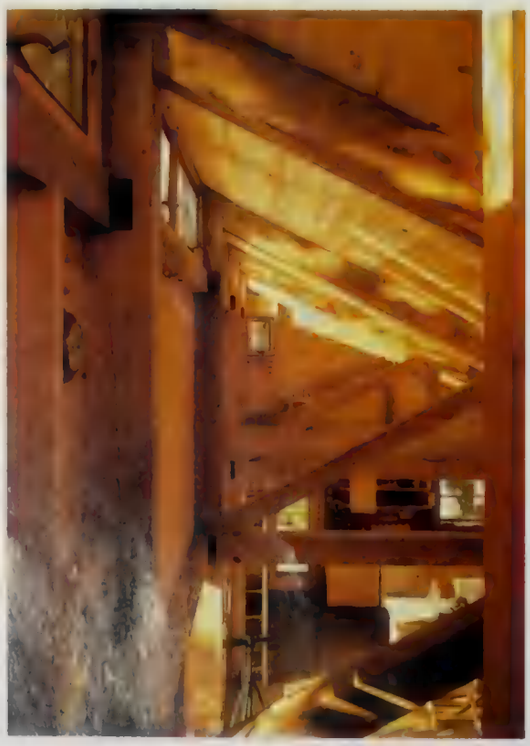
The cabin walls are sheathed in 2 1/4-in.-thick tongue-an groove decking that is made of three layers of 3/4-in. laminate ponderosa pine. The decking is secured to the posts using 20-penny na and structural adhesive, with 8-penny nails on 20-in. centers used to to nail the decking together between posts. This allows the decking to act a massive diaphragm to oppose lateral loads instead of the diagonal bra ing normally used in post-and-beam construction. The cabin is wrapp with a vapor barrier and covered with wood shingles. Asphalt shingl cover the roof, and by mid-November the cabin is enclosed.

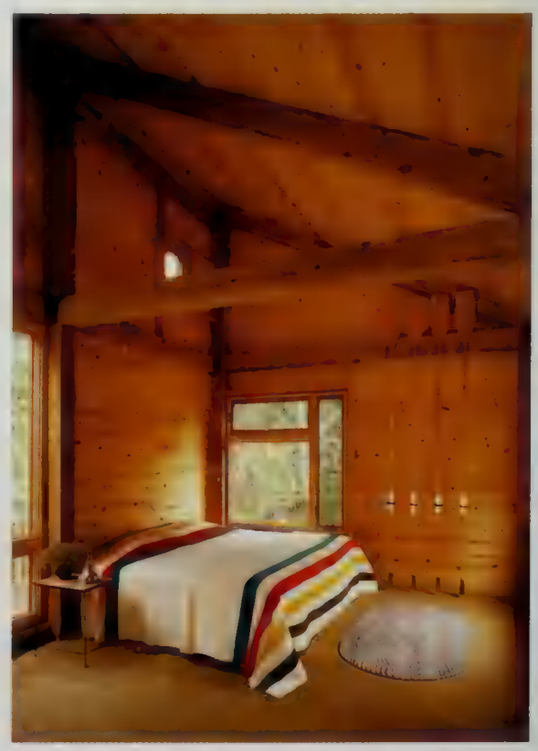


Rodriguez had the foresters cut as few trees as possible, so that the house would remain tucked into the woods. "It's part of being a good neighbor," she says.



The living room's huge picture windows (above) take in every possible square inch of the island's exceptional views. Clerestory windows (right) allow light to graze the living-room ceiling in late afternoon. Laminated-wood decking, used as sheathing, doubles as the interior wall finish in the guest cabin (far right) and elsewhere.







1. *Kitchen*
2. *Loft above*
3. *Living/dining*
4. *Up to bedroom*
5. *Bath*
6. *Bedroom*
7. *Guest cabin*



FLOOR PLAN

SUMMER 1995 This season is spent on finishing touches. Everything is custom-built by Conway and his son, Mont, including interior and exterior trim, pine kitchen cabinets, whose shelves suspend from threaded steel rods over them, and the cedar screen that separates the stairway to the loft from the living room.

Outdoors, they build the decks and shutters of pine to cover windows during the winter. The larger of these slide on barn-door tracks and are kept flat and square by crossed tension rods fabricated at the local boatyard. Smaller shutters swing away from the windows and are hung from massive custom-made hinges. The shutters make closing the cabin for the season or opening it up again a quick and easy procedure.

As this work continues, the water system is under construction. Water can be pumped from an existing well or collected from the roofs and stored in three 500-gallon polyethylene tanks located in the crawl space under the guest cabin. Once collected, water from the tanks is pumped to a 1,000-gallon Alaska-cedar water tank, built on a post-and-beam platform at the high point of the island, to pressurize it for use. "Here's a typical 'Clarence' invention," says Rodriguez, referring to her builder and pointing to a clear plastic tube that runs from the bottom of the wooden tank to the top. "You can measure the water level by where the ping-pong ball floats inside the tube."

SUMMER 1996 Rodriguez, Lowrey, and their young son, Jamie, vacation in the completed cabin for the first time. "Coming here is like being at peace, and it's a wonderful thing to be in nature—you're sort of held hostage by it when the whether is really bad, but yet it's thrilling in that regard," says Rodriguez. Sometimes, however, it would seem that even a person with her own island paradise just cannot get far enough away from city life—like the time Clarence Conway revved up his small boat with the outboard engine and motored all the way from Vinalhaven to Fiddlehead to make an unexpected delivery. It was a Federal Express package from Rodriguez's Manhattan office. ■

Manufacturers' Sources

Post and beam frame: *The Shelter Institute*
Laminated decking: *Potlatch*
Asphalt shingles: *Iko*
Wood windows and doors: *Marvin*
Screen doors: *Brosco*
Custom hardware: *Hopkins Boatyard*
Loop door pulls: *Simons Hardware*
Floor stain: *California Paint Co.*
Wood chairs: *Smith and Hawken*
Propane Lamps: *Humphrey*
Low-flush toilet: *Kohler*
Water tower: *Hall-Woolford Tank Co.*
Polyethylene water tanks: *Hancor*
Generator: *Honda*
Woodburning stove: *Rais*
Gas refrigerator: *Servel*
Skylights: *Velux-America*



The entry court (oppo-
site) is paved with loca
river stone and raised
a few steps to enhanc
its status as a separat
element. The primary
entrance (this page)
leads to a tall
clerestory-lit gallery.

A house in the north Georgia mountains by **SCOGIN ELAM AND BRAY** finds common ground for opposing elements.

by Clifford Pearson





If some architecture today glorifies the collision of building elements or forces, this mountain house in northeastern Georgia searches for balance. Designed for a couple with varied backgrounds and interests, the house accommodates differences by finding common ground. The result is a house that is urban and rural, formal and informal, but never contradictory.

The clients, whose children by previous marriages are grown and live elsewhere, come from different parts of the country: the husband from Missouri and then the Washington, D.C., area, and the wife from Atlanta. He is a journalist and avid collector of regional art, while she has become a knowledgeable gardener and landscaper. But just as husband and wife have learned to share in each other's avocations, the house itself brings different elements together—blending indoors with outdoors, for example. "There isn't a clear-cut his-her dichotomy in the house," says Merrill Elam, AIA, one of the three principals involved in the project. "We wanted to keep things seamless." A weekend retreat that is a two-hour drive north of Atlanta, the house will eventually become the couple's primary residence.

The first clue that a delicate balancing act is going on here is the arrival court, an elegant stone-paved drive around which the major parts of the house are arranged. "We liked the idea of placing this urban element in a rural setting," says Elam. "It isn't exactly a new idea, since the French and English often did it with their country estates," she adds, "but it works." The juxtaposition of city and country is heightened by centering a large screened porch on the entry court, an arrangement that offers visitors views through the porch and toward the trees even before they leave the confines of their cars.

Because the house is broken into three major components—a guest house and garage, the screened porch, and the main house—it can seem either large or small, depending on how you define it. Certainly, 4,095 sq ft is a lot of space for a two-bedroom house. But if you subtract the guest house/garage and screened porch from the total, the house is a more modest 2,400 sq ft. From some perspectives, the house seems to disappear in the landscape, while from others its cantilevered roofs give it a strong presence. "I love the enigmatic scale of the house," says Mack Scogin, AIA. "You don't quite know if it's big or small. It keeps changing."

Set in the foothills of the Appalachian Mountains less than a mile from Georgia's border with North Carolina, the structure spreads out along the ground. "We didn't want the house to compete with the rolling forms of the mountains," explains Elam. Indeed, the flat roofs and strong horizontal lines were designed to contrast with the verticality of the hills and the site's slender poplars. Although heavily wooded when the clients bought it, the property had been cleared and farmed earlier in the century. A small stream called Barker's Creek runs near the southern edge of the site, supplying power for an old grist mill and water *(text continues)*

Project: *Mountain House*
Dillard, Georgia
Architect: *Scogin Elam and Bray Architects—Mack Scogin, AIA, Merrill Elam, AIA, Lloyd Bray, AIA, principals; Denise Dumais, Kevin Cannon, Beth Morris, Kathy Wright, design team*
Engineer: *Palmer Engineering Co. (structural)*
Landscape Designer: *Marchant Martin*
Consultants: *Ramon Luminance Design (lighting); Waller Davis & Assoc. (hardware); Parker Sales Co. (hydronic heating)*
Builder: *Winfred McKay Construction*





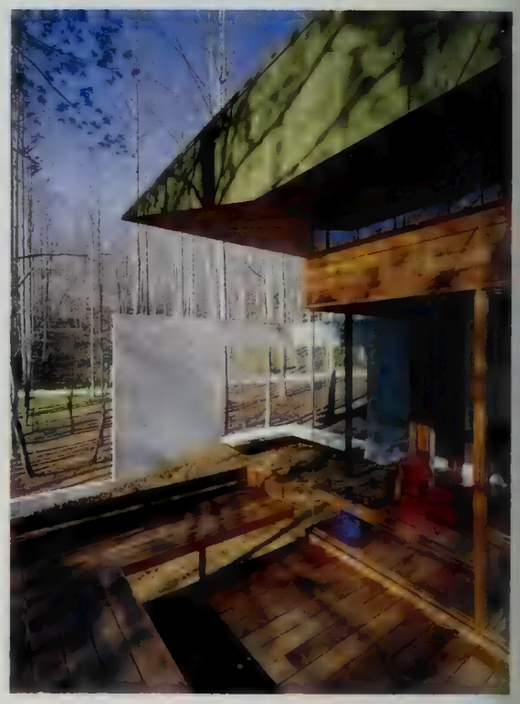
Moving around the house: the entry court with the main house and screened porch (below), the guest house seen from behind (above), and the south elevation (opposite, top and bottom).





Various spaces offer a range of outdoor experiences. The 900-sq-ft screened porch is practically an indoor space, with its built-in concrete bench (left in photo below), cooking grill, and radiant-heat floor. A porch off the living room (top right) offers views to a neighbor's pasture, while a concrete wall with its corner cut away (bottom right) helps define an outdoor room to the west of the house.







for horses in a neighbor's pasture. An artists colony is also nearby.

While the site is undeniably beautiful, it presented the architects with a host of challenges. The first was finding the right place on the property to build the house. An old farmhouse had once stood at the foot of a large oak tree near the road leading to the property and the clients originally thought they would build there. But after walking the site with the architects and builder Winfred McKay, the clients agreed that the house should sit farther in on flatter land that had more privacy and offered better views of the pasture. That meant building a long driveway curving through the property. McKay, a third-generation builder born and raised in the area, found evidence of an old access road on the site and followed it, adjusting the route to save as many trees as possible. McKay also used the base of the driveway to form a small dam and create a pond west of the new house.

Another problem with the site was the abundance of water. The northeast corner of Georgia is one of the wettest areas on the Eastern seaboard and, as McKay explains, "There's a world of underground springs and streams" on the property. So concrete footings and foundation walls were built to create a partial basement, allowing water to run around the house and down to the creek to the south. A pleasant discovery in the area, though, was the number of local subcontractors who did high-quality concrete work, a result of the need for retaining walls in a hilly county that gets a lot of rain. Scogin Elam and Bray saw this as an opportunity to use concrete as a key element in the design of the house.

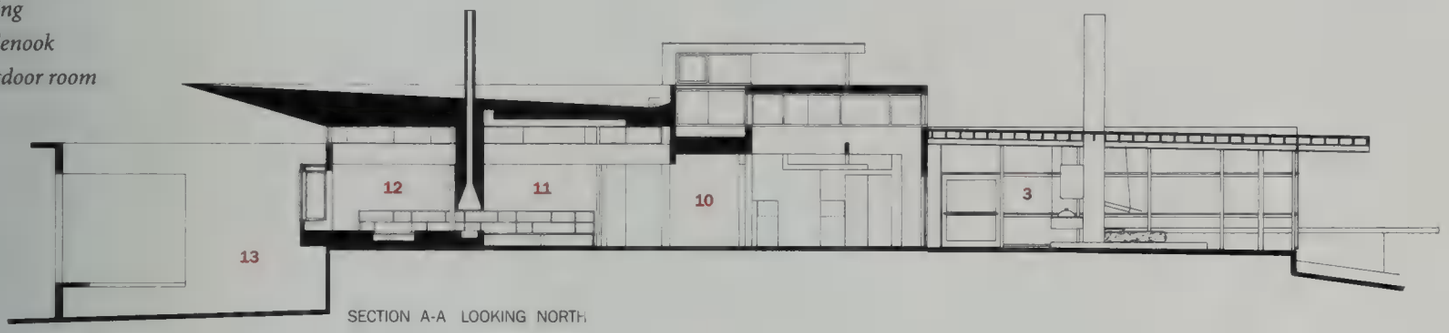
Mostly wood-framed, the house includes some steel and poured-concrete elements. The screened porch, for example, is framed in steel, and steel beams were used for some of the cantilevered roofs (such as the one over the front door). Interestingly, the longest roof cantilever (on the west side of the main house) is supported by wood trusses that, because they run deep into the living room, can extend far beyond the building envelope without the aid of any steel. Steel columns, though, are used to support the open porch on the back of the main house.

Concrete is put to use for both practical and expressive means. Forming the foundation and base of the house, poured concrete performs much of the structural grunt work. But it is also used to extend the house into the landscape and provide a link between ground and architecture. An exposed concrete wall running through the kitchen and entry gallery in the center of the main house and a concrete chimney in the middle of the screened porch help anchor the house to the land. At the same time, a right-angled concrete wall reaches beyond the western end of the house to partially enclose an "outdoor room." On the opposite side of the house, another concrete wall extends past the guest house.

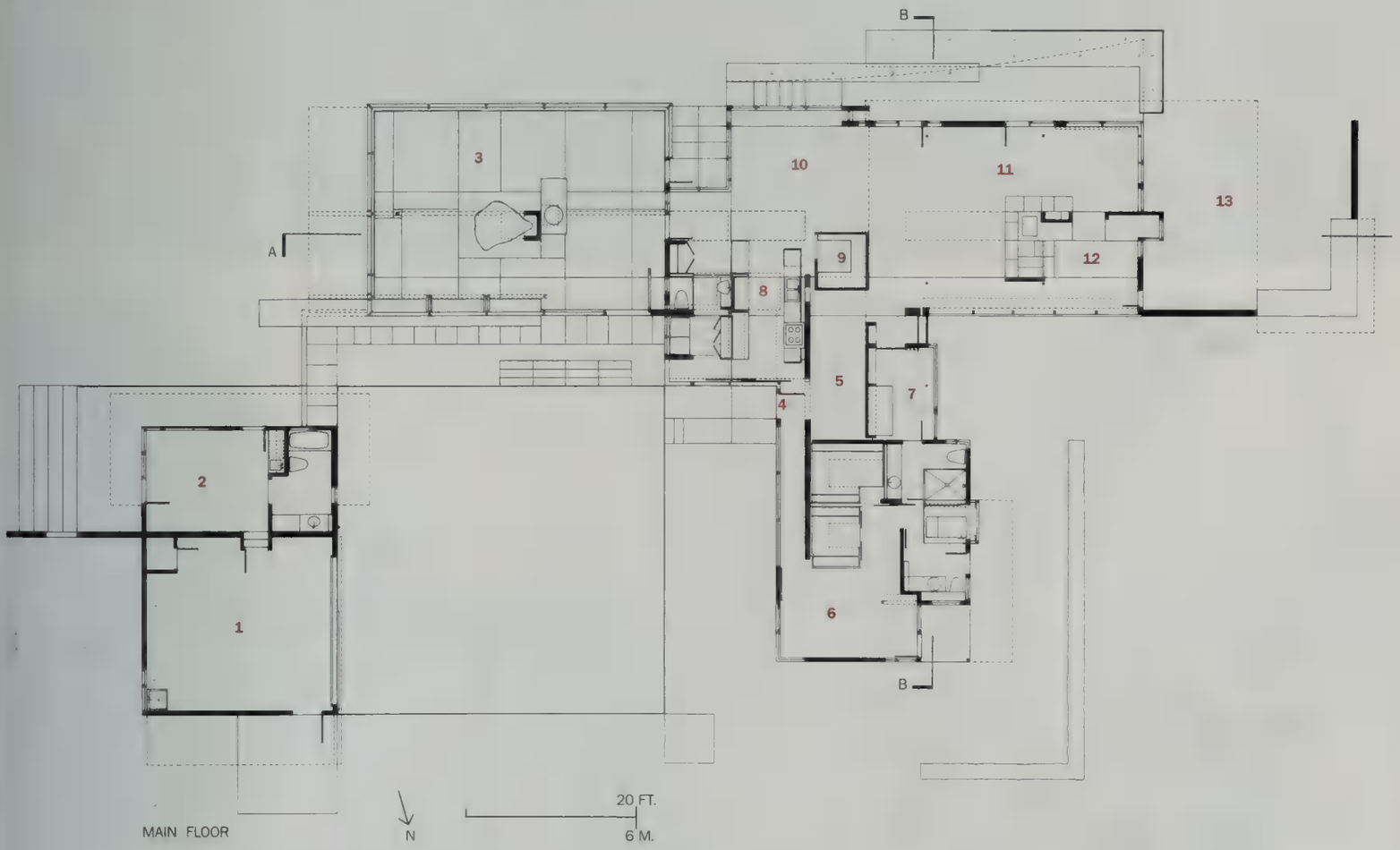
1. *Garage*
2. *Guest*
3. *Screened porch*
4. *Entry*
5. *Gallery*
6. *Bedroom*
7. *Office*
8. *Kitchen*
9. *Pantry*
10. *Dining*
11. *Living*
12. *Inglenook*
13. *Outdoor room*



SECTION B-B LOOKING EAST



SECTION A-A LOOKING NORTH



MAIN FLOOR

N

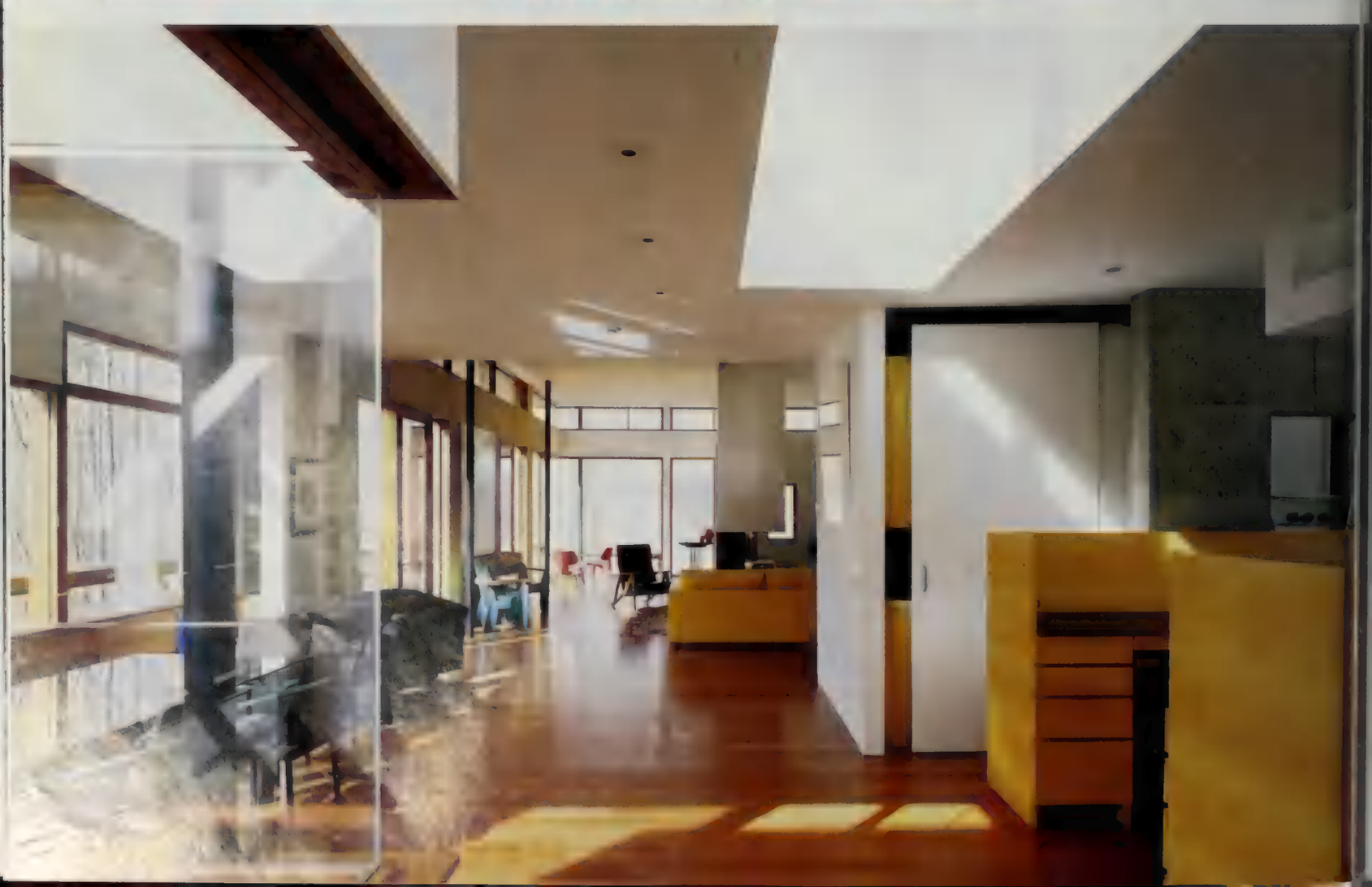
20 FT.
6 M.

Built for less than $200 per sq ft, the house combines wood-frame construction with some steel and poured-concrete elements. It arranges three main components—an 800-sq-ft guest house and garage, a large screened porch, and a 2,400-sq-ft main house—around a central court. A clerestory/roof plan (right) shows how the architects brought in sunlight from above.



CLERESTORY / ROOF PLAN







A two-story entry gallery (left) provides wall space for art. Wood floors throughout the house are Australian Sydney Blue and have radiant heating below. The living room (below and opposite) is a sweeping space but has some areas like an inglenook (opposite top) that are more intimate.



This project is just the second house that Scogin Elam and Bray has completed—the first being the Chmar House in Atlanta [RECORD HOUSES, April 1991, pages 76-85]. "We don't really seek out residential work," says Elam, "but I enjoy the close client contact you get with a house." She also likes the chance to combine different kinds of construction systems. "Wood-frame construction is so different from the sort of commercial or institutional work we usually do. We ended up combining what we knew from our other projects with what we learned on this one." The firm now has two more houses under construction, one in Massachusetts and one in Maine.

The clients found Scogin Elam and Bray through a mutual friend and then remembered seeing the Chmar House on a house tour. The wife's visit to the architect's office convinced her to hire the firm. "Talking to Merrill in her war room with all those amazing models, I knew this was the firm we wanted," she remembers. In terms of requests, the clients asked for just two things—wall space for artwork and lots of views to the outdoors. As part of the balancing act that runs throughout the project, the architects opened the house along much of its south side to views of the creek and pasture and attached a long open porch here as well. The north side of the house is more closed off, providing the wall space needed for the clients' collection of regional artwork.

The couple moved into the house last summer and what surprises them the most is the changing nature of the daylight (and even moonlight) that comes inside. Although the horizontal sweep of space in the living room, the back porch, and the screened porch is quite strong, the architects provided vertical accents with extra height in a few places, such as the entry gallery and a portion of the master bedroom. Wherever the roof is raised, clerestory windows bring light in from above.

The clients also like the fact that the screened porch essentially acts as a second living room—playing country cousin to the more urban indoor one on the other side of the house. Equipped with a built-in concrete bench that extends beyond the screens on the north side, a large grill hanging off a central chimney, and radiant heating in the concrete floor, the 900-sq-ft covered porch works year-round for entertaining.

By setting the guest house a few feet from the main house, the architects provided privacy while maintaining the feeling of a closely knit compound. Although small, the guest house has its own outdoor porch overlooking one of the property's two ponds and has proved comfortable for adult children and in-laws.

"The house has some radical moves that seem perfectly natural," explains Scogin. "Things such as centering the house on the screened porch—a void—and treating the entry drive as an object raised slightly above grade are really quite radical. But they don't hit you in the face." Looking back on the project, Scogin concludes, "The house is much like the clients. It seems simple and straightforward at first, but becomes more complex the better you get to know it." ■

Manufacturers' Sources

Redwood windows: *custom by Simpson Millworks*

Glass: *Clayton Mountain Glass & Mirror Co.*

Mahogany doors: *custom by Simpson Millworks*

Maple and slate cabinets: *Peter Bull; Gillespies Cabinet & Furnishings Shop*

Paints and stains: *Glidden; The Martin-Senour Co.*

Paint on metal: *Duron*

Stucco paint: *Tnemec Coatings*

Plastic laminate: *Wilsonart*

Ceramic wall tile: *Dal-Tile*

Australian Sydney Blue wood floors: *Woodrich Wood Floors*


2637

Set among historicist neighbors, a house in Chicago by KRUECK & SEXTON provides a welcome break with the past.



By putting the two-story curtain wall on the rear of the house (rather than on the front, as originally proposed), the architects opened up the house while preserving a sense of privacy.

by Cheryl Kent

Tucked into Chicago's North Side, among new residential developments flaunting bulging bays and faux antique details, is an unapologetically Modernist house—steel-framed, with a two-story curtain wall, looking self-possessed and completely lausible in this unlikely neighborhood.

Designed by Krueck & Sexton Architects, the house was originally designed to have a glassy facade that would visually bridge the ousing developments on either side. The clients—despite their attraction to a nearly transparent house—feared the scheme provided too little rivacy. So the architects rotated the house 90 degrees. "That was the reakthrough," says project principal Mark Sexton, AIA.

From the street, the house now presents a modest, relatively narow face largely composed of masonry, rather than a length of glass. nstead of a bridge, the house has become a punctuation mark between eighboring developments. With its tight brickwork, yellow canopy supported by an off-center yellow column, and vertical strip of windows, the reet elevation achieves a Mondrian-like feeling of poetic geometry, at nce rigorous and open.

The land for the 6,000-sq-ft house came with conditions. It was urchased from the adjacent development and required the architects to onform to certain design guidelines and submit their plans for approval y the development association. The architects made no attempt to match ne neighbors' historicist details. But by using required materials, such as nasonry and limestone, they were able to meet the design standards. The development association passed the plan, indeed, expressing admiration for the Krueck & Sexton house.

Despite the house's cost of $2.2 million (including the price of the land) and rich features like marble, granite, terrazzo, and imported glass tile, together with much built-in cabinetry and furniture, the house does not feel opulent in the material sense. Rather, it is the luxurious disbursement of space and the natural light (which is generous, even on a gray February day) admitted through the towering two-story glass curtainwall that give the house its sensuality and warmth. Designed for a couple, their two young sons, and a live-in sitter who were tired of the narrow rooms and limited light in their old residence, the house provides a welcome contrast to the past. And while they tended to crowd into just one part of their former residence (a speculative house built in the 1980's), they find themselves enjoying all of the new one.

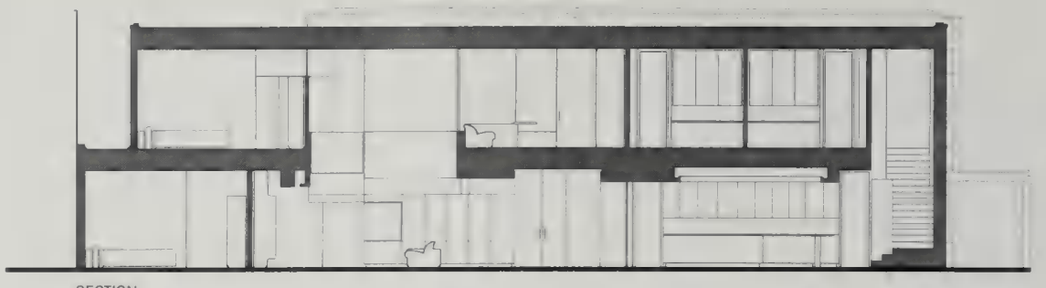
Warmth is not a word usually associated with Krueck & Sexton's work. The firm is mostly known for a series of Chicago apartments in which steel featured prominently and highly lustrous paints (some actually intended for painting cars) and furniture upholstered in metallic leathers created a coolly futuristic feeling [RECORD INTERIORS, mid-September 1988, pages 50-59].

Not so this house. At the center is the double-height living room which is visible from nearly everywhere in the house. Sexton says, "If you want, you can be in touch visually with everyone and all parts of the house." Design principal, Ron Krueck, FAIA, adds, "It's like a Roman house; you don't have to be in [the living room] to participate in it." Indeed, the living space is like an ancient Roman house's central courtyard, through which one must pass to get to another room. This implied connection with all parts of the house lends an intimacy to the design that industrial materials cannot undermine.

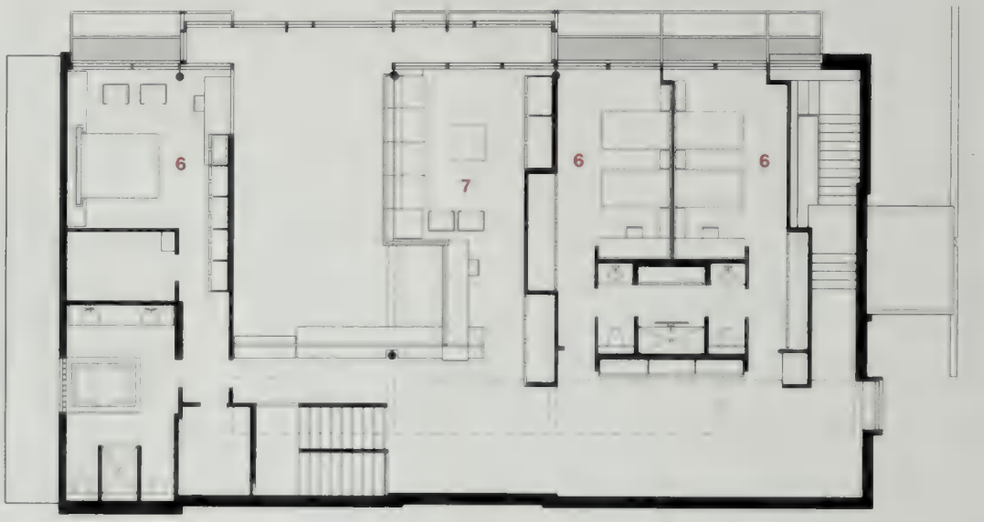
The second level forms a U-shape wrapping three sides of the living area below. At one end is the modest-sized master bedroom and bath. A skylit corridor overlooks the living area and leads *(text continues)*

heryl Kent is a former correspondent for Progressive Architecture *and writes about rchitecture and design from Chicago.*

Project: *Brick & Glass House Chicago, Illinois*
Architect: *Krueck & Sexton Architects—Ronald Krueck, FAIA, design principal; Mark Sexton, AIA, project principal; John Carhart, project architect; Hans Thummel, John Ronan, design team*
Engineer: *Tylk, Gustafson & Associates (structural)*
General Contractor: *Fraser Construction*



SECTION



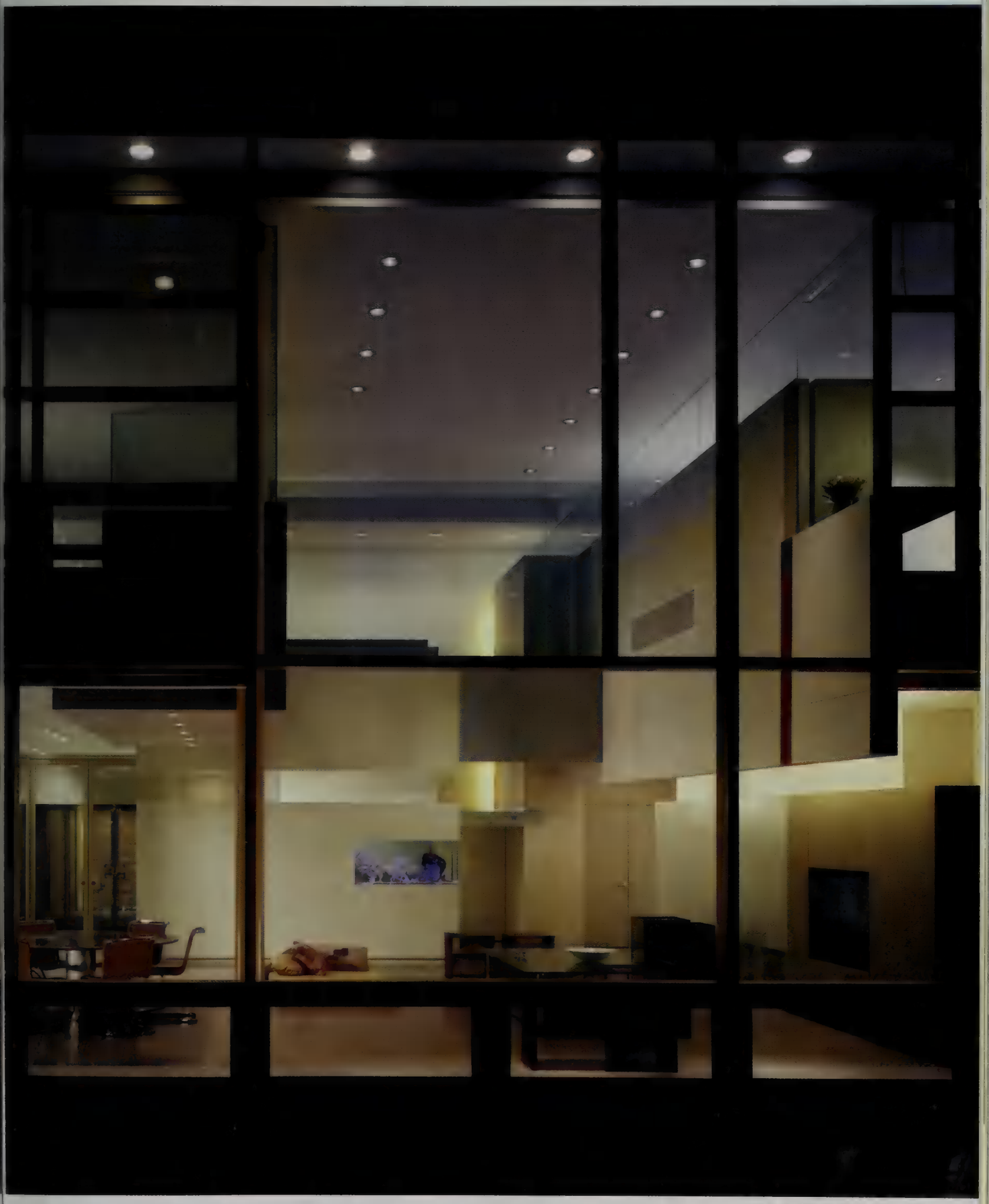
SECOND FLOOR PLAN

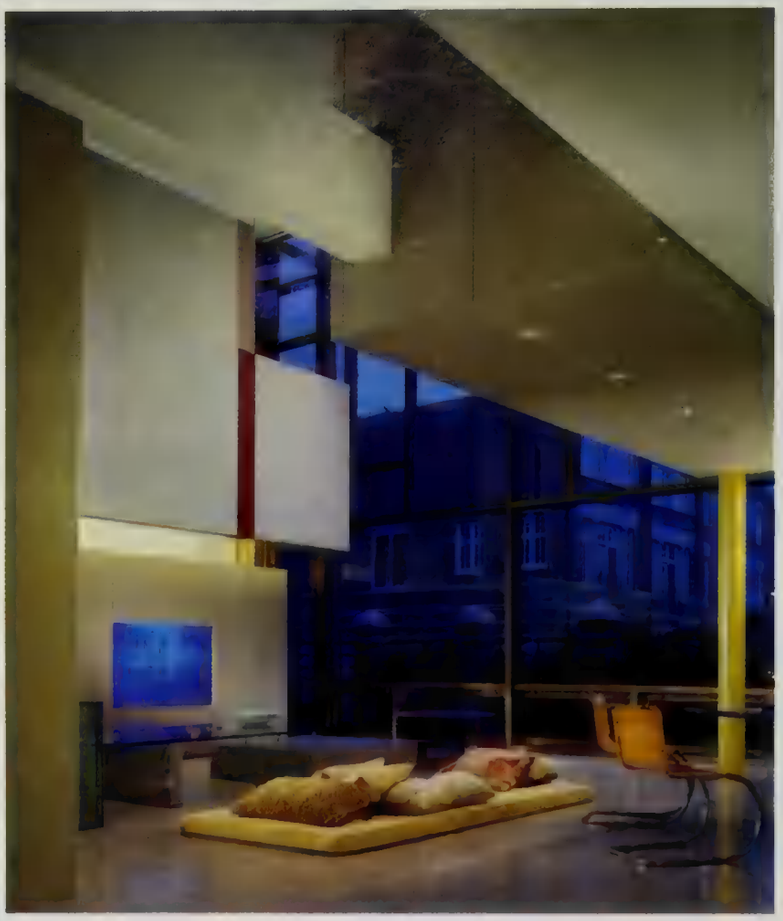
1. *Garage*
2. *Kitchen*
3. *Pantry*
4. *Dining*
5. *Living*
6. *Bedroom*
7. *Library*

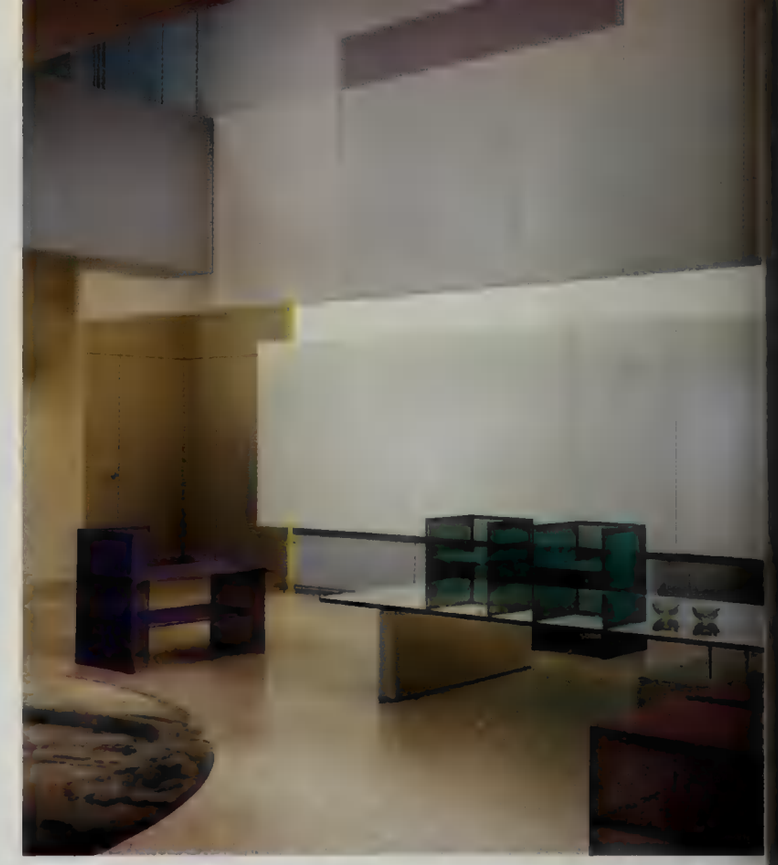


FIRST FLOOR PLAN

The 6,000-sq-ft house sits on a 100-ft-by-88-ft lot that is bordered by new townhouses on either side. Although the architects initially conceived of the house as a pure rectangle, they eventually decided to express a variety of volumes that overlap and interconnect. The two-story curtain-wall facade on the rear of the house is a Mondrian-like composition that also opens up views to the south (opposite).







In the living room (left, above, and opposite), cabinets are surfaced with low-lustre paint in a subtle range of colors. Projecting and recessed surfaces serve as a kind of mural and add spatial complexity to the room.

past the library cantilevered over the dining space, and on to the boys' bedrooms and common bath beyond. A back stair at the end of the hall leads down to the kitchen, adjoining mud room, and rear entry.

There are built-in cabinets throughout the residence—cantilevered into the living room or standing free—and these are responsible for some of the house's sculptural moments. The cabinets also accommodate the detritus of daily life, leaving few distractions from the architectural quality of the space.

To gain the greatest spatial freedom, the house is framed in steel. Slender yellow columns on a 20-by-26-ft bay punctuate the central living space. Just as steel framing is rare in a residence, so too is a two-story curtainwall. Using a bronze-tinted aluminum, off-the-shelf system appropriate for any high-rise, the architects manipulated the dimensions and framing of the glass, ultimately making 60 sheets of drawings to detail the elevation.

An unpleasant surprise came early in the project when soil borings showed the ground was too unstable to support a conventional foundation. As a result, the architects decided to sink caissons to a depth of 40 ft to guard against catastrophic settling. The new foundation added $50,000 to the cost of the house and meant that a planned basement had to be eliminated.

The house's entry sequence has created some confusion among visitors. Despite all the clues to the contrary, the canopy visible from the street shelters a secondary entry to the house. To reach the main door, one proceeds along the side of the house past three garage doors to two grand glass doors that offer views through the house to the opposite side yard. There is no doubt that this is the formal entry once you are there, but the confusion until that moment is real.

Krueck & Sexton had methodical clients who had spent years living in a well-built but poorly laid-out house, a year looking at existing housing and finding nothing they liked, months more searching for an urban site for a commissioned house, and every Saturday for six months in the public library looking at foreign architecture magazines for design ideas. In the end, the clients asked the architects for a kitchen separate from the dining area, a mudroom where their small sons could take off their shoes and coats, and a two-story living space. Bedrooms are small, so extra space could go into the living area. "We don't live in the bedrooms, so I said, 'Keep them small,'" recalls one of the clients.

Although all of their friends warned them not to build their own house and told horror stories of cost over-runs and late schedules, they went ahead with the project. In the end, they enjoyed the experience so much they are eager to do it again and with the same architects. ■

Manufacturers' Sources

Wood joists: *TJI*
Brick: *Carolina Ceramics*
Aluminum curtain wall: *Active Industries*
Low-E glass: *Midwest Glass*
Double-plastic skylights: *Exarc*
Full-mortise locksets: *Schlage Lock*
Hinges: *Hager*
Pulls: *Builders Brass*
Cabinetwork and custom woodwork: *Alexander*
Paints and stains: *Benjamin Moore*
Wall coverings: *Maharam and Knoll*
Plastic laminate: *Nevamar*
Terrazzo floor: *Metropolitan Terrazzo*
Carpeting: *Karastan Bigelow*
Custom perforated-metal chairs: *Tesko*
Custom tables: *Midwest Glass*
Custom upholstery: *Joe's Upholstery*
Interior ambient lighting: *Wiremold*
Downlights: *Lightolier*
Exterior lights: *Lightolier and Bega*
Light controls: *Honeywell*
Toilets and sinks: *Kohler*





On a ridge above the Tennessee River, MOCKBEE COKER designs a weekend retreat that steps down its site and reaches toward the sky.

by Karen Stein

It was designed in section," says Samuel Mockbee of his and partner Coleman Coker's latest house. Part of an informal series of residential projects that the duo has produced in the rural South over the last decade [RECORD, April, 1992, pages 132-139], this one steps down its dramatic site, a bluff above the Tennessee River, as if to exhibit its x-ray approach. The setting—three miles from Mississippi, across the water from Alabama, but on Tennessee soil—seems to mirror the architects' position in the profession: all over the place, but firmly rooted in the South. Both architects have struggled with the limitations of the rubric "regionalist." In fact, Coker echoes Antoine Predock's adage that being called "a regionalist means you can get a job out of state." Says Coker: "We look at where we are and try to make connections to it." As for being comfortably ensconced in the South, Coker demurs: "We're considered so far out' here. We're getting more criticism than clients."





SECTION AA

1. *Bedroom*
2. *Living/dining*
3. *Study*
4. *Master bedroom*

That Mockbee Coker's work eludes simple categories of style is not surprising, considering that they themselves seem to eschew traditional architectural practice. Business-minded principals, a permanent staff, even an actual office, all have been tried and abandoned over the almost 15 years of the Mockbee Coker partnership. What survives is an ongoing sharing of design goals and teaching ideas that withstands the oscillations of the peripatetic Mockbee and the more methodical travelings of Coker. Mockbee is a professor at Auburn University in Alabama and shuttles between the school's home base and an outpost in Greensboro [RECORD, March, 1996, pages 74-77], and commutes as a visiting critic, for this semester at least, to Yale in New Haven, Connecticut, but calls Canton, Mississippi, home. Coker, who spent part of last year in Rome as a fellow at the American Academy and a majority of 1993-94 in Cambridge, Massachusetts, as a Loeb Fellow at Harvard, lives in Memphis, where this year he helped establish the Memphis Center for Architecture. Although unlikely types to be championing the virtual office (they draw, paint, make sculpture, and write letters by hand), that, in effect, is what they have. Of the bond, the art-school trained Coker says: "He's a painter. I do sculpture. We don't sit around talking about architects. We talk about Klimt, Degas."

om the Tennessee ver, the 3,200 sq ft use looks like a wer (opposite and ove). Maroon brick t perpendicular to ff brick gives the terior a "roughness" ys Coleman Coker.

The architects work differently on each house, giving their process an extemporaneous feel that seeps into their designs. For this house, Coker went to Greensboro equipped with site photographs and documentation of existing conditions. He and Mockbee sat together over an evening and the following day, drawing and discussing their ideas. "The site is such a strong factor. It gave the direction to head in," Coker says of the scheme that steps down a hill, long in its approach to the water and suddenly tall at the waterfront with materials chosen for their woodsy texture or, in the case of galvanized aluminum siding, for its industrial agricultural reference. On his return to Memphis, the scheme was translated immediately to model form. "What the model is, is *(text continues)*

Project: *House on the Tennessee River Hardin County, Tennessee*
Architect: *Mockbee/Coker Architects—Coleman Coker, partner-in-charge; Agrippa Spence Kellum, Patrick Johnson, Samuel Mockbee, project team*
Interior Design: *Schecter and Flom*
Consultants: *Tom Pellett and Michael Hatcher (landscape); Graham's Lighting (lighting)*
General Contractor: *L.D. Briley Contractor*

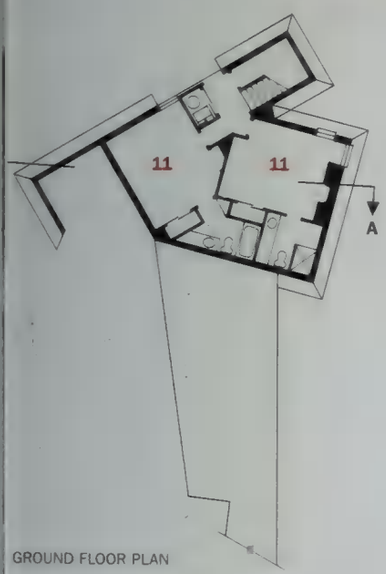




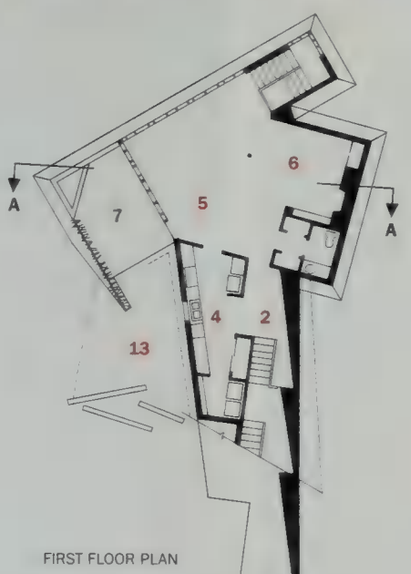


The upside-down V form of the carport, which appears to float on steel rods and beams, reinforces the structure's horizontality (top). The roof also screens neighbors without blocking views of the Tennessee River (opposite). Its open-jawed north end beckons toward the entry (above). From door to "prow," the 100-ft-long house steps down 30 ft to the river.

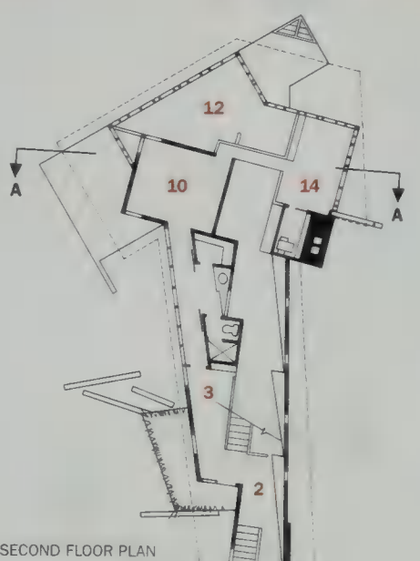




GROUND FLOOR PLAN

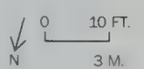


FIRST FLOOR PLAN



SECOND FLOOR PLAN

1. *Entry*
2. *Gallery*
3. *Sitting room*
4. *Kitchen*
5. *Dining*
6. *Living*
7. *Exterior deck*
8. *Garage*
9. *Storage*
10. *Master bedroom*
11. *Bedroom*
12. *Open to below*
13. *Terrace*
14. *Study*





what we ended up with," says Coker. Details were faxed back and forth.

The simplicity of the process was made possible by the clients, two brothers, both doctors, who live in Memphis and wanted a weekend retreat. "They were," says Coker, "completely receptive." The older brother reports that it's a family hobby to look at land with no particular agenda, but when this 1 1/2-acre parcel became available, the duo felt compelled to buy it and build on it. When the brothers sent away to *Better Homes & Gardens* for a set of plans that would be their house, a mutual friend questioned their approach: As collectors of contemporary photography and Pre-Columbian artifacts, why shouldn't they exhibit the same level of connoisseurship in their house? The brothers called Mockbee Coker.

One brother, clearly mesmerized by what he repeatedly refers to as the "unfolding" of overlapping spaces as the house traverses the site, calls it a family "art project." Unfolding also characterizes the way the house was built. Coker convinced the clients to negotiate a package deal with the contractor, with whom the architect had previously worked, rather than solicit competing bids, in order to remain within the $350,000 construction budget. This required more intense site supervision, but also allowed for on-the-spot invention. With direction from Coker, it was the masons who created the random pattern of maroon brick set perpendicular to greyish-brown brick (for splayed walls, the brick set on its edge offers structural support, preventing sag within the air space) and the steel workers who arranged the bundled rods that act as deck railing. Says Coker of the method, in what could be a motto for the Mockbee Coker partnership: "It's the importance of making and thinking at the same time." ■

A river barge (right) is a typical view from the suspended study (below right). Andres Serrano photos line the stair (below left).



Manufacturers' Sources

Veneer brick: *Tri-State Brick Company*

Aluminum curtain walls, windows and doors: *Kawneer Architectural Products*

EPDM roofing: *Carlisle Syntec system*

Galvalume roofing: *ASC Pacific, Inc.*

Light blue low-E glass, skylights: *PPG Industries*

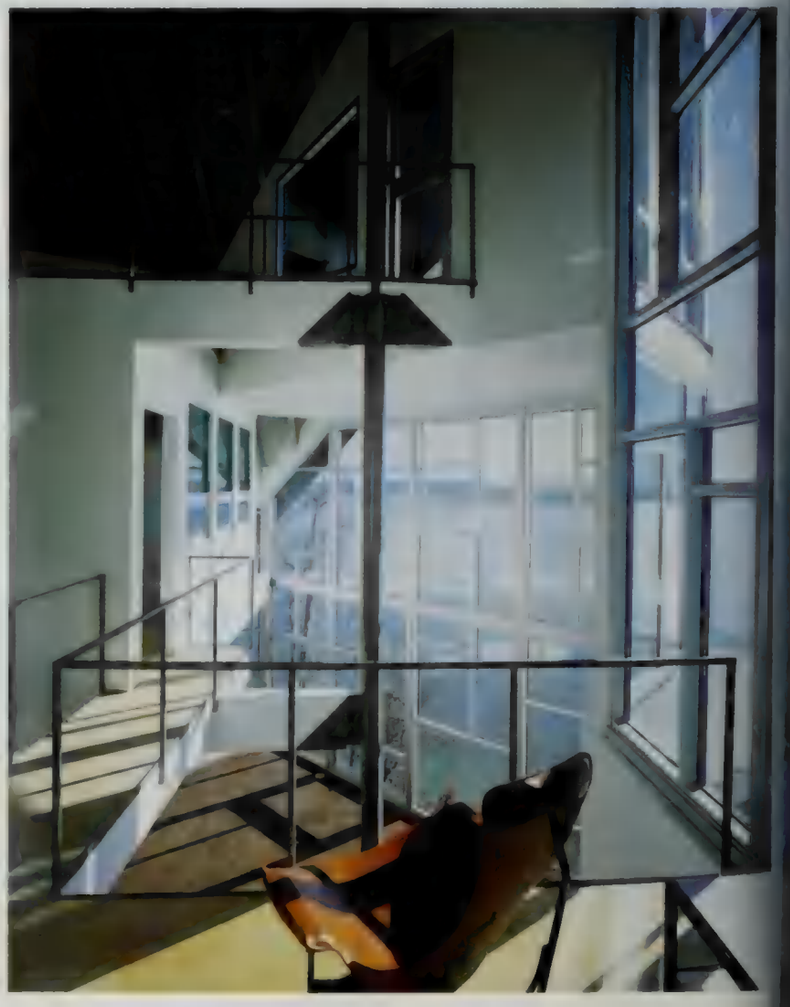
Exterior stain: *Pratt and Lambert*

Lever locksets: *Sargent (10 Series)*

Interior paints: *Donald Kaufman Company*

End-block flooring: *Oregon Lumber Company*

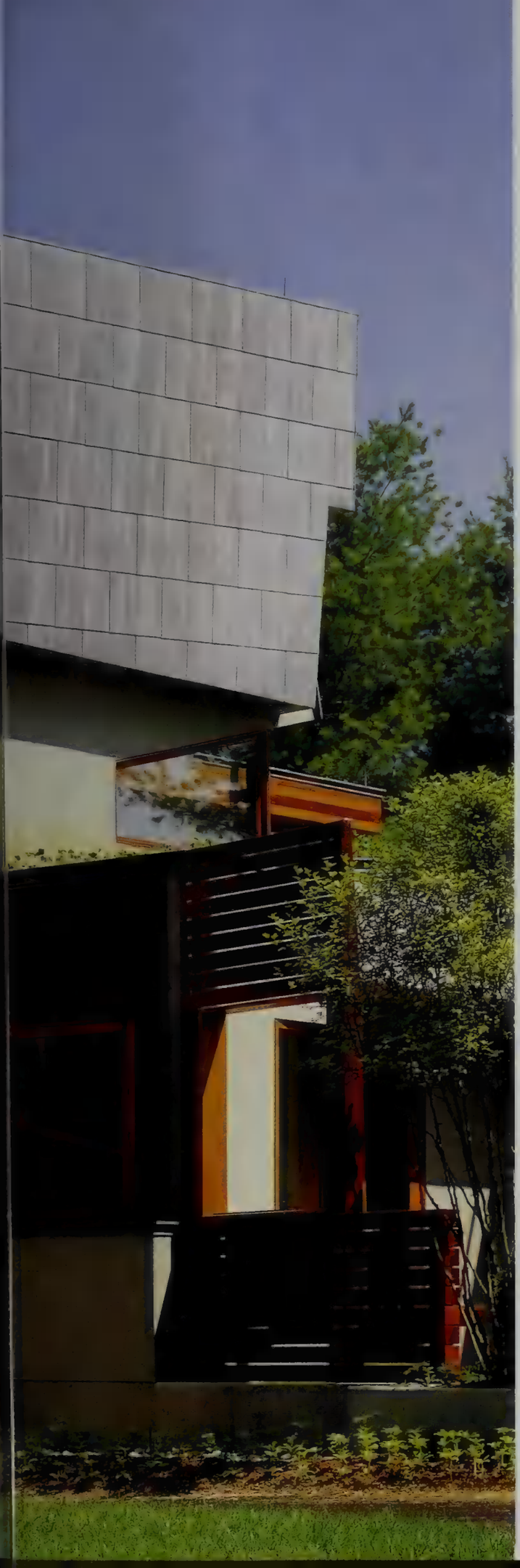








A wood-clad projecting volume signals the stone-paved entrance of the Teiger house. Upper-level glazing is protected on this south-facing elevation by a brise soleil.



PHOTOGRAPHY: © JEFF GOLDBERG/ESTO

A mathematical ordering system helped ROTO ARCHITECTS sculpt a complex scheme.

by Wendy Moonan



The wing at bottom in photo left focuses on views. A pool ties the wing to guest quarters. In an earlier design, bedrooms had been placed in the gap.

Clark Stevens and Michael Rotondi of RoTo Architects regard change during design as positive. In the case of the Teiger house, that's a good thing. In 1991, two years into the planning of this 6,500-sq-ft house in rural New Jersey, there was a major modification in the program: the client got divorced. Redesigning the children's wing and replacing a library with a folk-art-display space were only two of the most conspicuous design changes. Since 1991, when Rotondi, a founding partner of Morphosis, left to form a new Los Angeles firm with Stevens, he has been redefining the way he works as an architect. And taking change in stride, "trying to integrate idea and experience," he says, is part of the process. "Over the years I realized that when you are moving through the world, your body is experiencing things and information is coming from all directions. Your body is a receptor. How do you take this complexity of experience and come up with an ordering system?"

David Teiger, the former owner of a management-consulting firm, chose RoTo over 20 firms. He produced a 28-page program (down to the sock drawers) and told the designers, "I spent 40 years thinking about this house."

Teiger knew the spectacular site well because he had covered every inch on horseback. It is a five-acre rectangle that begins in a forest and opens onto a grassy plateau that drops into a valley dotted with pastures. There are uninterrupted views to the hills 30 miles to the northwest. Rotondi decided to tuck the house into a slope at the end of a 100-year-old bridle path, where the forest opens onto a meadow. *(Text continues)*

Wendy Moonan is a contributing editor at House & Garden *magazine.*



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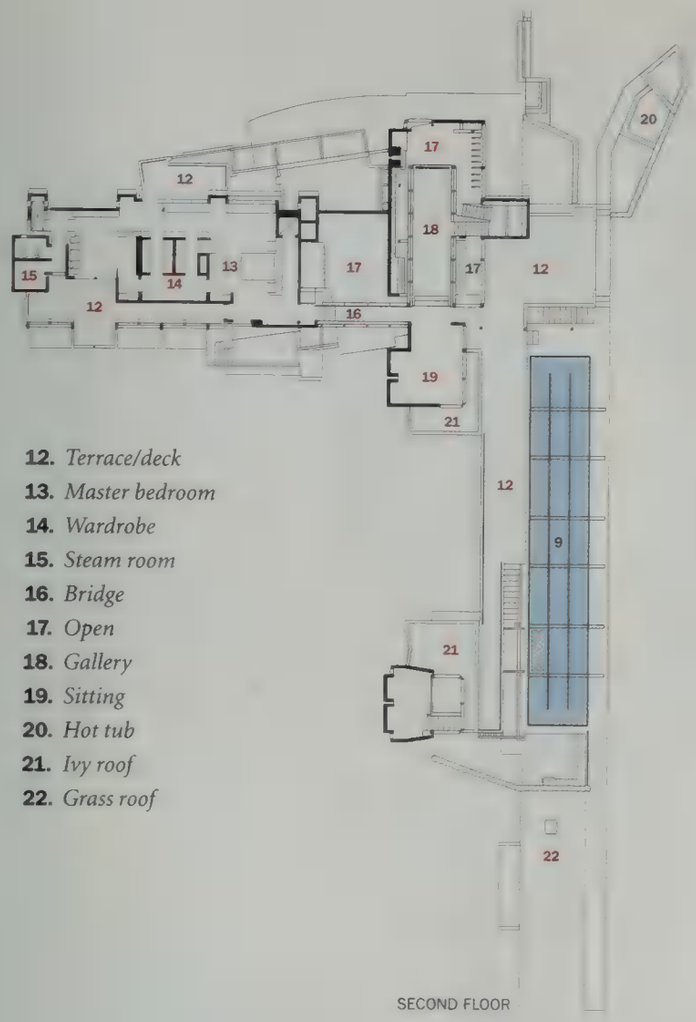
The evident complexity of the design comes out of highly specific responses to site and program issues. It is an assertive sculptural presence, but it hunkers low into its site. "Rotondi had the idea that the house be of the land and not on the land," Teiger says, in a reference to Frank Lloyd Wright. It was designed, says Rotundi, from the inside out as much as the outside in. The architects developed an ordering system to enable the design to respond to a range of issues—whether environmental, programmatic or a combination, and on a range of scales—from the expansive view to the alignment of cabinet-door edges at a window. Operating horizontally, vertically, and on a diagonal, "It's a system of volumes, frequencies and grids that are derived from the siting of the house," explains Michael Brandes, the site architect.

Project: *Teiger House*
Somerset County, New Jersey
Owner: *David Teiger*
Architect: *RoTo Architects—Michael Rotondi, Clark Stevens, principals; Brian Scott, Kenneth Kim, Tracy [illegible], project team*
Consultants: *Douglas T. Lawton (owner's representative); Walter S. Carell, Jr. (landscape); Brigitte Semtob, Ivan Chermayeff, Frank Maresca (art installation); Sandy Grotta, Brigitte Semtob (interiors); Fisher Marantz Renfro Stone (lighting); Chermayeff & Geismar (graphics)*
Contractor: *P. J. Korfmann Contracting*

The house was designed as an L, which completes the rectangular edge of the forest defined by farm fields. The heart of the house is the outside corner of the L where the wings meet, "passing through each other like interfering magnetic zones, creating a third zone for the family and living area," Rotondi says.

Each wing has a different formal ordering system. The east-west wing is laid out on a 20-ft bay system that is marked by vertical light monitors (previous pages), and is divided further into both fourths and fifths. These divisions offer a rich but systematic way to align centerlines of doors, walls, and windows—even the beams above the bed, which vary in width and spacing to conform to the system. "We are trying to get multiple rhythms working simultaneously," Rotondi explains. The north-south wing is organized on 10- and 12-ft increments. Vertical spacing is organized on a separate system, with important datum lines at 18 in. and 7 ft. "It was almost like learning a language. The house has such a precise vocabulary," says Doug Lawton, a Cambridge Seven architect who served as the client's representative during construction.

Once the system was established, the designers overlaid a palette of materials. A central fieldstone hearth and fieldstone retaining walls lock the structure into the site, a direct reference to Wright. A "structural" grid of timber framing is alternately revealed and shrouded by drywall within and synthetic-stucco cladding outside. A teak-like wood siding, called Pau Lope, expresses the interpenetration of one modular system by the other.



SECOND FLOOR

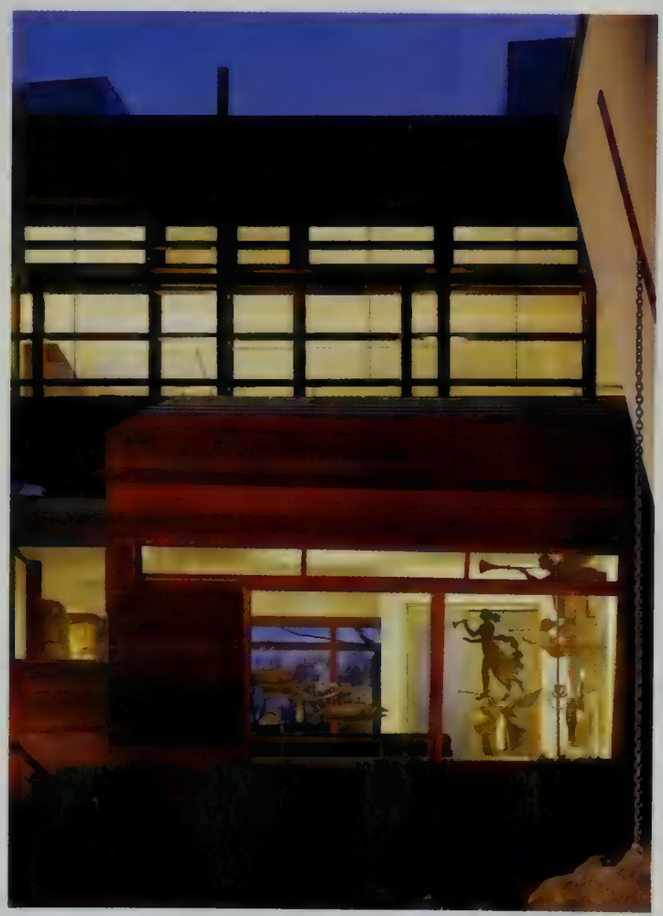


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6 M.

FIRST FLOOR

1. *Entry*
2. *Living*
3. *Dining*
4. *Kitchen*
5. *Bedroom*
6. *Media room*
7. *Mud room*
8. *Garage*
9. *Pool*
10. *Grotto*
11. *Guest suite*
12. *Terrace/deck*
13. *Master bedroom*
14. *Wardrobe*
15. *Steam room*
16. *Bridge*
17. *Open*
18. *Gallery*
19. *Sitting*
20. *Hot tub*
21. *Ivy roof*
22. *Grass roof*

ıe house's overall dering system is ost evident on the uthern entrance ele- tion (right), where e horizontal 1-ft ıtums are called out a Pau Lope wood ise soleil, which is tended to protect a rrace (far right). sts and beams that pear extruded from e house lead the eye northwestern views posite).

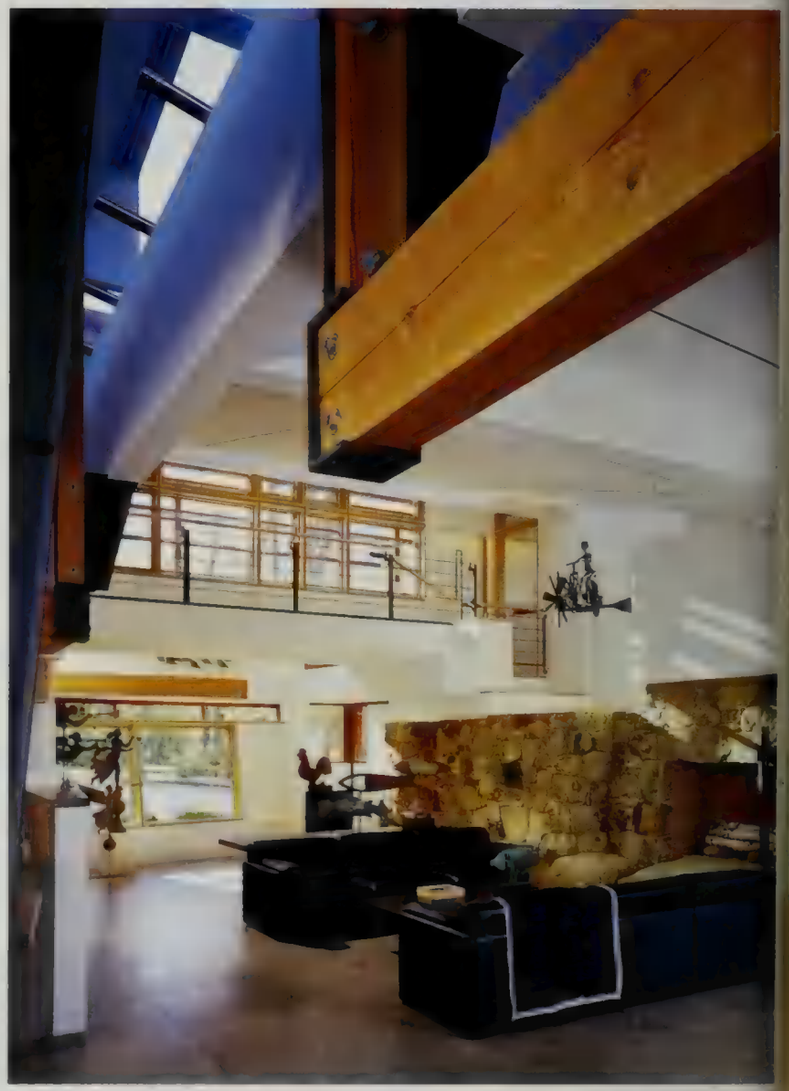








Left: Dining room from living room; bottom left: gallery; below: living room looking toward entry.



For example, a second-floor bridge to the master bedroom passes through the gallery to emerge as a canopied walkway at the pool. There were additional layers of "rules." Windows, for example, were placed at changes in plane or materials—the trim altered to reflect the adjacency of a cabinet, soffit, or grid line. There are windows of every shape and size, most custom-made in teak trimmed in ash.

Because the system was so complex, however (it includes a preference for L-shapes that lock elements into each other, for example), Rotondi compares the design process to "riding a bronco." Indeed, the concept required decisions at such a level of specificity that even voluminous plans could not cover them all. "The change orders were gigantic," says contractor Frank Korfman, who worked there for four years. "We could have built the World Trade Center with the papers we had." Still, as [illegible] began to understand the system, they started making [illegible] adding a closet-door thickness to recognize the [illegible] of wall plane. Teiger, the architects, and site mechan[illegible] to the realization of the design.

[illegible] of such "rules" for the Teiger house had one [illegible] it became a means to accommodate the numerous program changes requested by the client. Each change could be considered within the terms of the system, and adapted to it. To handle the project's complexities, Brandes was sent east from RoTo's California offices with architect Donato Maselli. (Brandes and Maselli have since opened their own office in New Jersey.)

Considering its evident complexity, the experience of the house is that the sculptural elements recede. The L shapes in plan causes the visitor to move through the house like a ballet dancer, veering to one side of a column, guided to the next space by a sun-splashed surface. The house is delineated by light. The quietude many visitors feel, offers Rotondi, "comes from your being the focal point of all those lines." ■

Manufacturers' Sources

EIFS Cladding: *Sto*

Roofing: *Vulcan (EPDM) and lead-coated copper*

Glazing: *Duratherm (wood); Hopes (steel); Fiore (metal skylights)*

Millwork: *Pine Brook Cabinets (Jerry Laracca)*

Architectural metal: *Aileron Design, Red Hook Fabricators*

Hardware: *Tecnolumen, Stanley*

Telecommunications: *Franklin Central Communications*

Tile and stone: *Charles Lehr*



A steel column supports the hull-like gallery above the dining room. Douglas fir posts and beams frame the living room (beyond and opposite right). Floors are Yukon White Indiana limestone.

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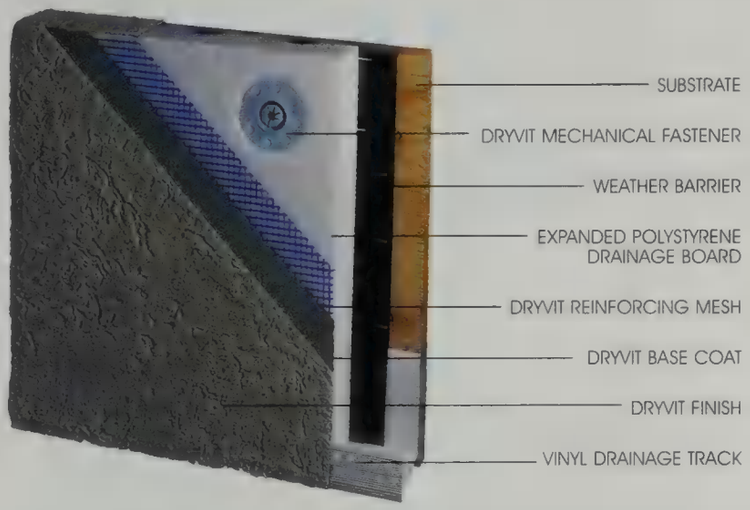
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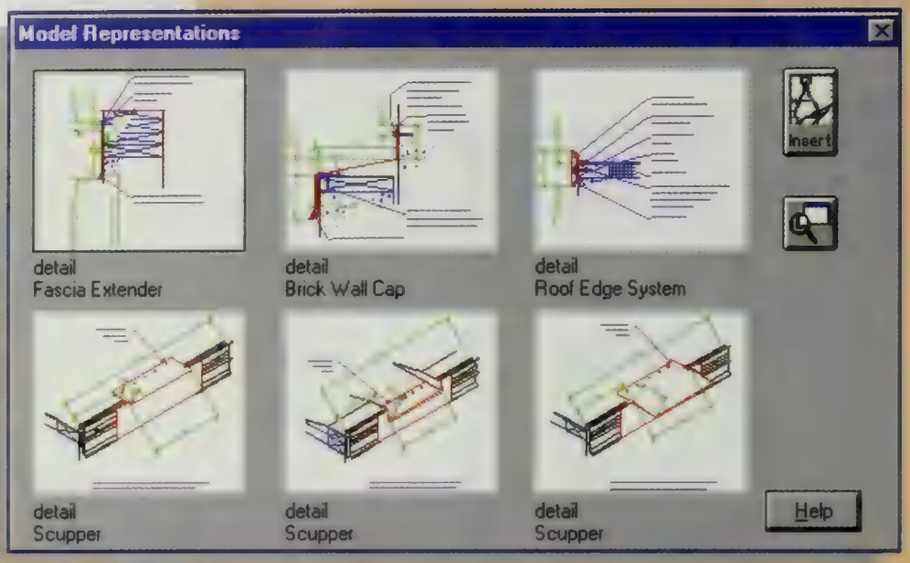
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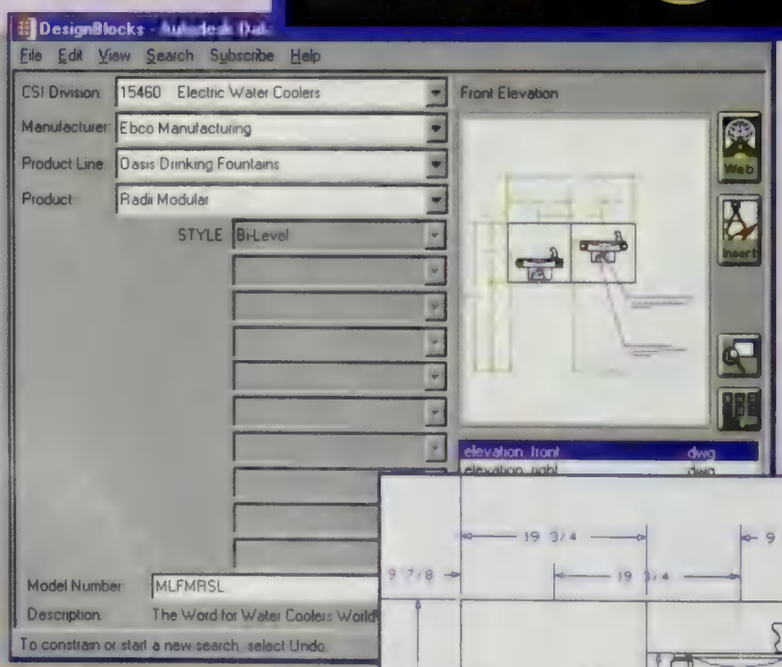


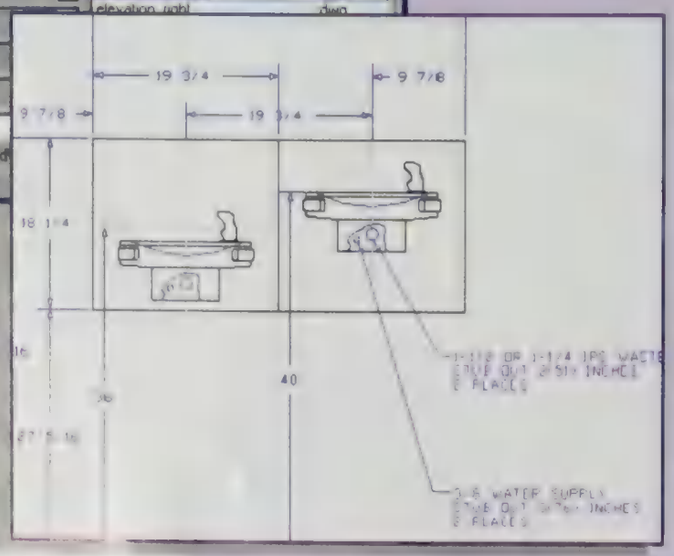
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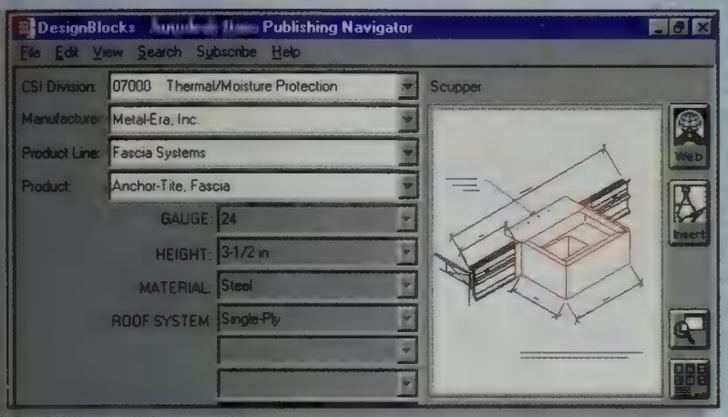
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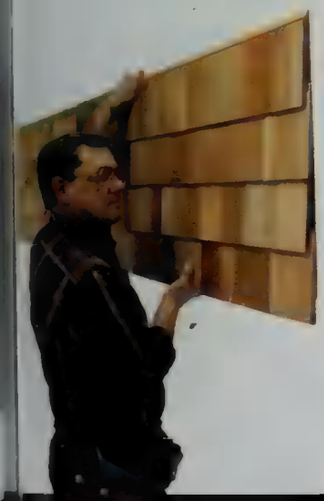
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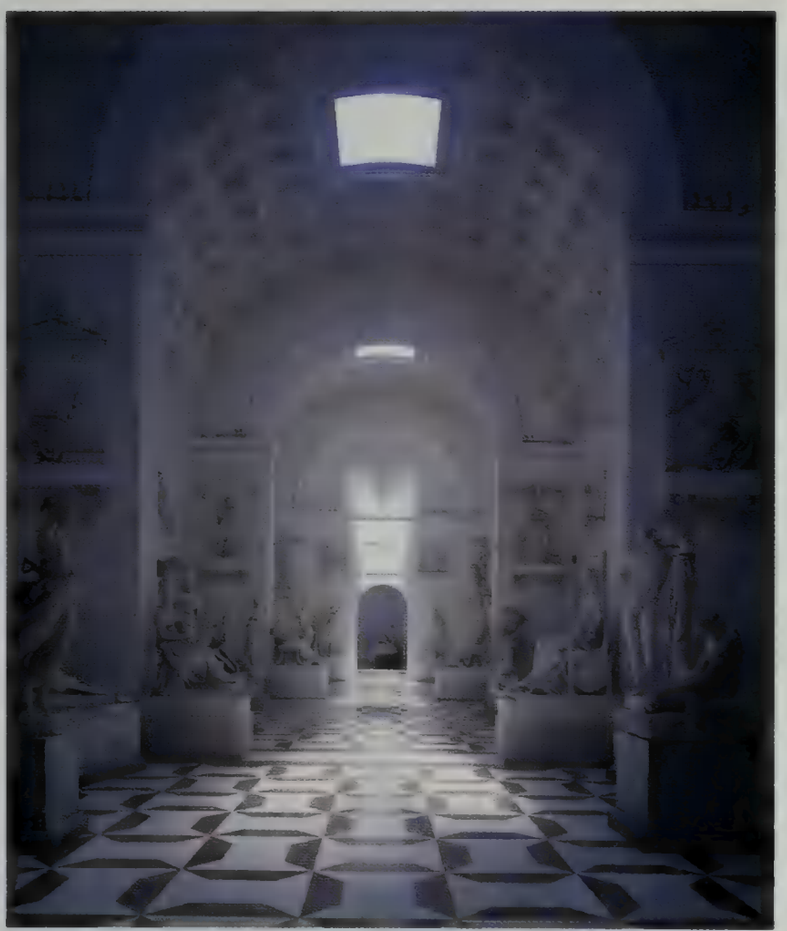
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A look back: One artist, one architect, one photographer's obsession.

RICHARD BRYANT TRAVELS THE WORLD PHOTOGRAPHING THE BEST NEW ARCHITECTURE. ON SUCH A TRIP, HE FIRST SAW THE MUSEUM OF 18TH CENTURY SCULPTOR ANTONIO CANOVA, REMODELED IN THE 1950'S BY CARLOS SCARPA. HE VOWED TO RETURN.

photo essay by Richard Bryant





Five years ago while in the Veneto photographing Andrea Palladio's Villa Barbaro at Maser, I first visited the Canova Museum [former home and studio of 18th-century sculptor Antonio Canova] in the village of Possagno, Italy. The small, uninspiring entry, where a few books and postcards were for sale, gave no hint of what lay beyond. Entering the *gipsoteca* (gallery of cast models) proper, I knew I had to return to indulge my obsession with interpreting through photography the combination of form, space, and light. Recently, I spent six days photographing in the museum—intensely hard work and pure pleasure. The original plaster casts of Canova's great works have a raw power that is sometimes lost in the highly polished sculptures installed around the world. In 1955, Carlo Scarpa was commissioned to restore the buildings, rearranging the sculpture and adding a wing to the overcrowded museum. The result is dramatic. ■



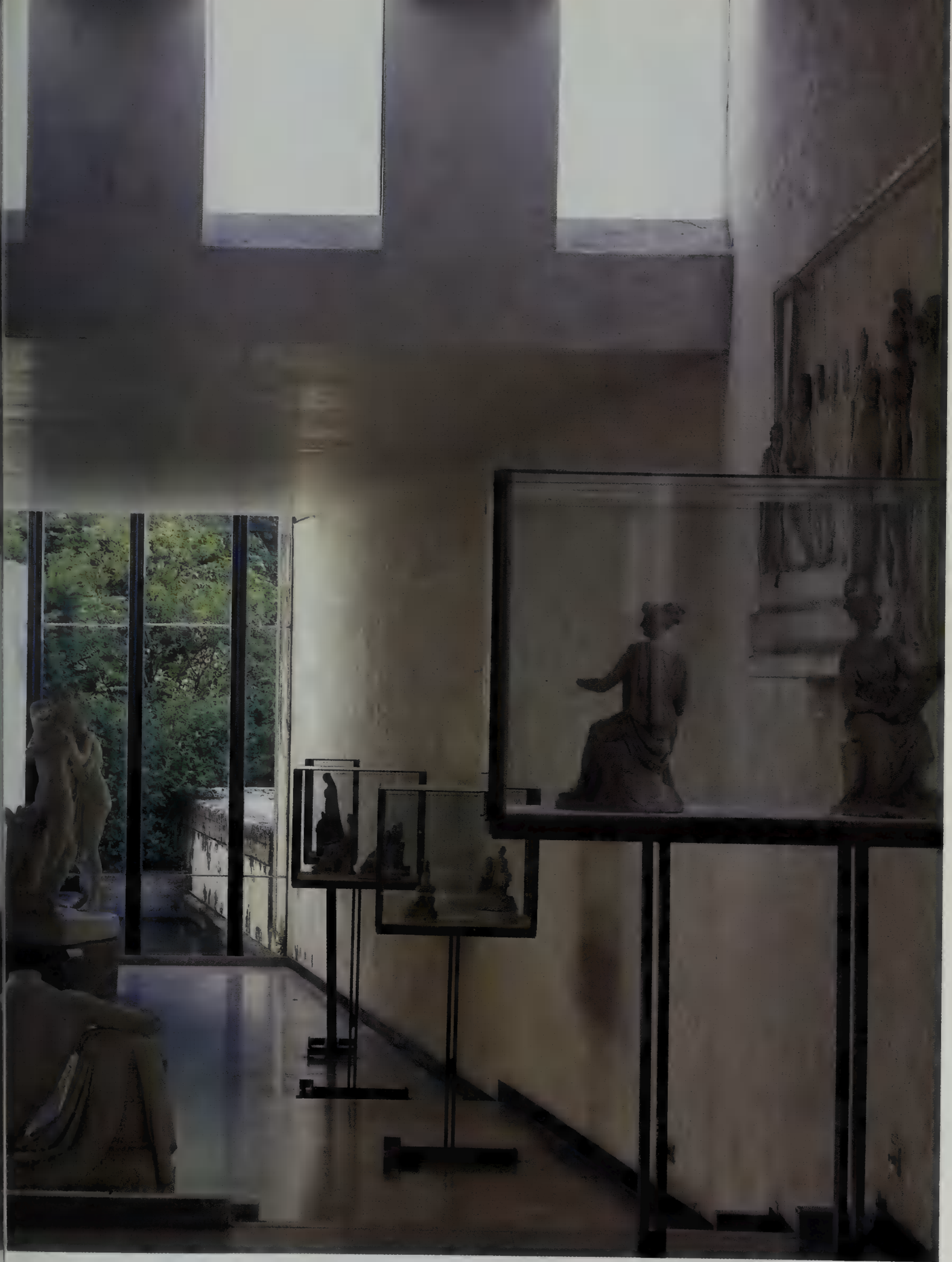
Canova's casts line the 18th-century *gipsoteca* (above). Canova is buried up the hill (left).

London-based Richard Bryant studied architecture in Kingston.



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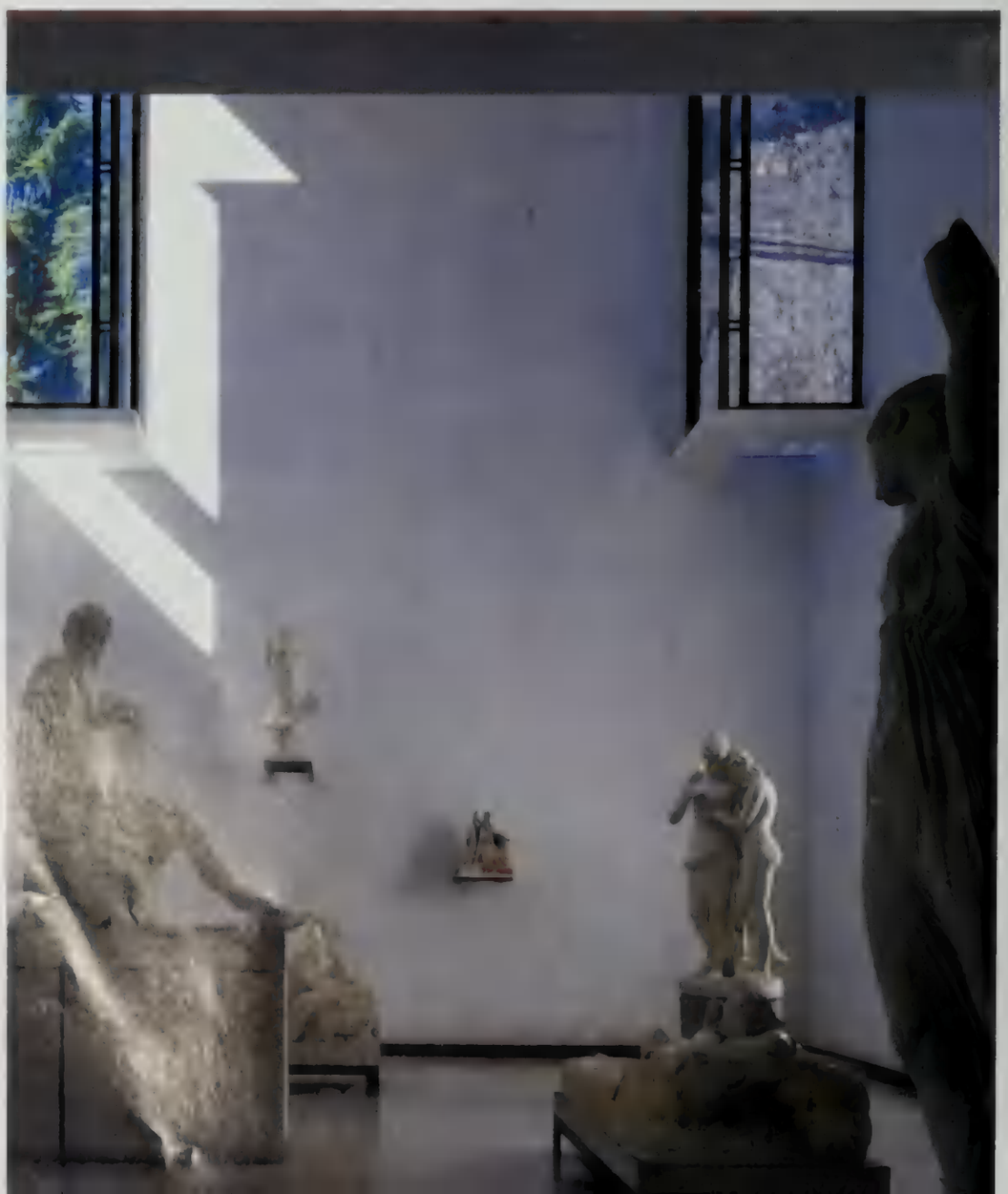








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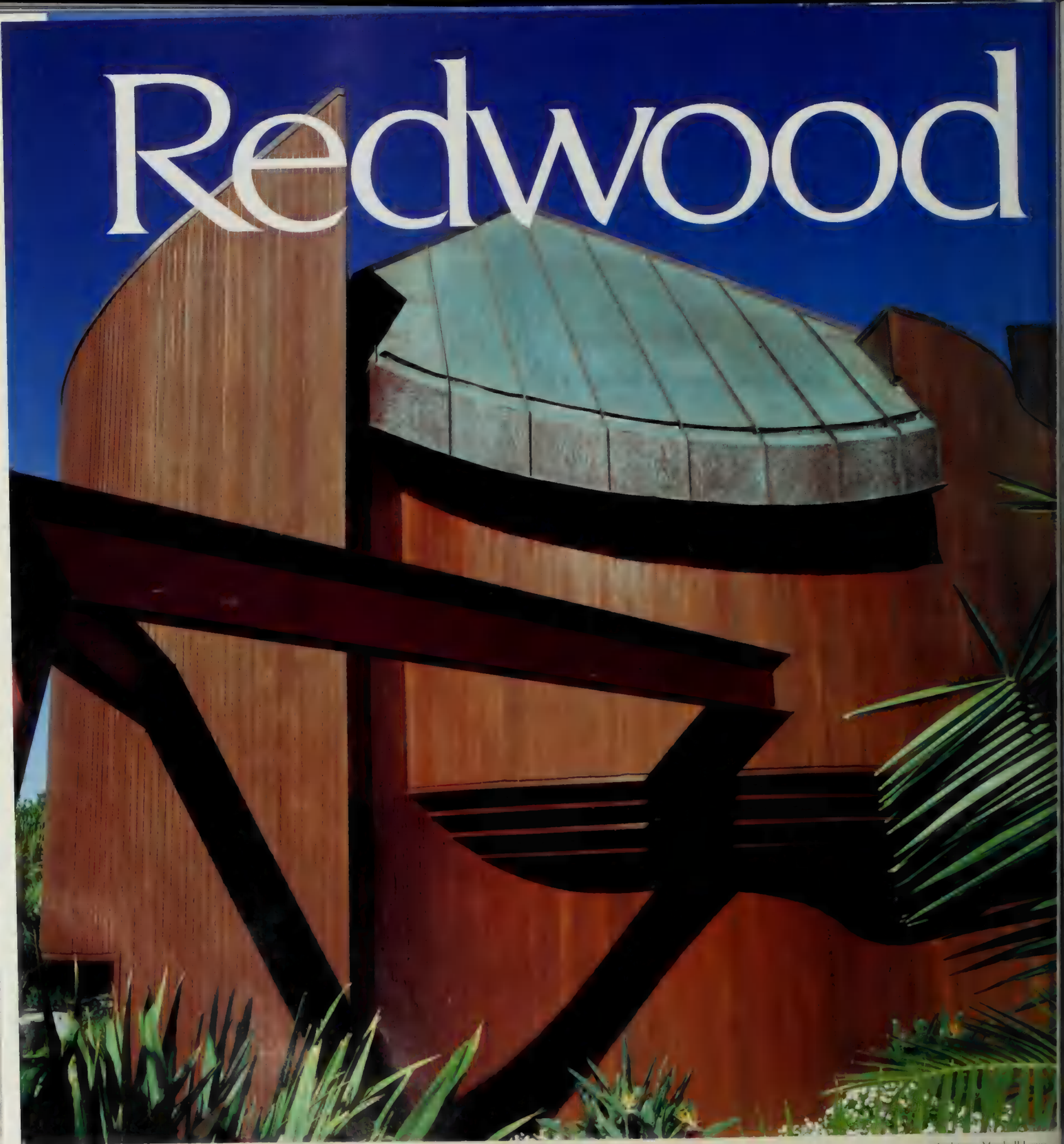
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CIRCLE 38 ON INQUIRY CARD

Designing Houses: How skillful firms succeed in a tricky business

ARCHITECTS CAN MAKE A GOOD LIVING AND REAP THE SPECIAL REWARDS THAT SMALL-SCALE CONSTRUCTION AND CLOSE PERSONAL RELATIONSHIPS OFFER.

by Nancy B. Solomon, AIA

A single-family custom home is the dream of most Americans and the fantasy of most architects. At least sometime in a designer's worklife, he or she will envision doing a unique home, perhaps as a way of launching a fledgling career, satisfying the desires of a well-heeled client, or indulging in artistic experimentation after years of corporate work. Even though house projects offer intimate scale, a manageable level of detail, and creative opportunities typically not found in other types of construction, many architecture firms shy away from residential work. Whether or not houses are a firm's primary business, they can too often feel like a labor of love rather than a viable business proposition. But some firms, both big and small, have found that residential work can be both rewarding and lucrative if properly structured and administered. Their methods of practice are nearly as varied as is house-design itself.

Making it with a housing focus

Many architects chose the field of architecture because houses are what they love to do. But at fee levels as low as 5 or 7 percent of construction cost, doing house design profitably is no easy feat, especially as houses increasingly require the services of consultants for structural, hvac, even audio-visual and "smart house" wiring. The key to obtaining profit-making fees, successful architects say, is not to shortchange those services clients value, and to get owners involved in selecting design services they are willing to pay for. Many house clients are inexperienced with building, and need to see several alternatives to feel comfortable. Separating the fee for preliminary design into one that is an hourly or fixed fee for a defined scope gives clients more control over how fees are spent. Indeed, those aspects of the process that are most hands-on can be most profitable, because clients can see the effort that goes into developing alternatives or shopping for suitable finishes. Interior designers often command much higher fees at lower risk because of their emphasis on personal service. Architects can obtain fees as high as 25 percent by offering a high level of personal service. But clients willing to pay these fees expect close and constant personal attention and they expect to be catered to at the level of the bathroom vanity mirror and the closet sock drawer.

Many residential architects are convinced that specialization is the key to success. "Unfortunately, a lot of commercial architects will do a home on the theory that it is easy," reports Jerry Gloss, a principal with Knudson Gloss Architects, a 20-person firm, based in Boulder, Colo., that concentrates almost exclusively on residential design. "I don't agree. Nine times out of ten, when hiring someone who doesn't have strong residential experience, the budget is busted because they don't know what they are doing."

But for some non-specialist firms, house-design is important, and they keep up to date on products and budgeting by keeping a steady flow of residential work in the office. "We generally have between one and four house projects at a time, so the staff is continually exposed," reports Richard Beard, a principal with Backen Arrigoni & Ross in San Francisco. In 1996, single-family houses represented 14 percent of the 80-person firm's total revenue.

Bedside manner

Any firm that does a lot of residential projects will agree that one of the biggest challenges in this market is the clients themselves. Residential clients are much more demanding of time and attention than their commercial counterparts. "The clients are more emotionally invested in the building—after all, it is usually their dream house," explains Richard Stacy, a partner with the 20-person firm Tanner Leddy Maytum Stacy Architects in San Francisco. "They want it perfect." Homeowners want to

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Continuing Education *This month's installment of the ARCHITECTURAL RECORD/AIA continuing-education series covers residential architectural-design practice. Use the following learning objectives to focus your study. After reading this article, complete the questions (page 234), and check your answers on the page indicated. AIA members may fill out the self-report form and send it in for two AIA Learning Units—Mark Scher, Director, AIA Continuing Education Programs and Products.*

Learning Objectives *After reading the article and completing the exercises, you will be able to:*

1. *Identify at least ten pointers for working more effectively and profitably with clients.*
2. *Explain the advantages and disadvantages of alternative residential project-delivery methods.*
3. *Describe two ways for medium and large firms to internally structure their design teams for residential projects.*

Nancy B. Solomon has joined RECORD as a contributing editor, writing on architecture, architectural technology, and professional practice.



PROFILE

An unusual partnership offers clients a wide choice of design approaches. If the RECORD HOUSES issue is often about distinct and innovative architectural design visions, Mulfinger, Susanka, Mahady & Partners offers nearly the opposite architectural approach. Not only do partners tailor their work closely to the traditional notions of home held by most clients, the 30-person firm is organized horizontally, rather than hierarchically, with 11 architects who are each responsible for their own projects.

The firm does not have a signature style, nor does it attempt to forge a coherent body of work based on commonly held ideals. This office works more like a series of architectural practices under one roof. Architects work independently, are given credit for the projects they design—even market themselves independently. The firm is thus able to offer clients a variety of working styles and design styles. A prospective client may interview several staff architects before selecting one.

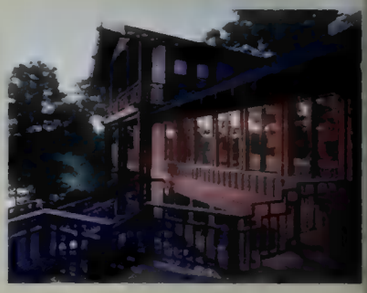
As a result, the office's built work exhibits a striking diversity. Sarah Susanka designed the hipped-roof prairie-style structure (previous page), while Kelly Davis did the similarly Wright-inspired house at top left in the photo grouping at right. (It is located in Somerset, Wis.)

Contemporary western design motifs infuse the Stratton Transformation, top right, Inver Grove Heights, Minn., by Michaela Mahady. Mahady also designed the Maple Forest House in Minnetrista, Minn. (bottom left). It was featured in the television program, *Hometime*. At left is the bungalow-like Dillon/Lohman cottage, Madeleine Island, Wis., by Robert Gerloff. Gerloff is among the firm's project architects who have left to found firms of their own. At bottom right, Dale Mulfinger designed the New England-influenced Rotileie Residence in Shoreview, Minn.

The firm markets itself aggressively, in part because it actively seeks a clientele that may feel it cannot afford architectural services. The firm's work has not only appeared on television, it is often published in home-plan, decorating and home-building publications and appears frequently in local newspapers. The partners feel these are the outlets where their target customer will more readily find them.

James S. Russell









see options for virtually all details, for example, and will call the architect in the evenings and on weekends.

Of particular note, explains Mark Simon, a partner at Centerbrook Architects and Planners in Essex, Conn., is that residential clients generally come in pairs with equal say. Often, the two partners in a relationship are very different from each other in terms of personal style and interest in architecture. That means a lot more negotiating both in meetings and behind the scenes. Sarah Susanka emphasizes the importance of drawing out the quieter partner so that both clients are ultimately attended to. She is partner with Minneapolis-based Mulfinger, Susanka, Mahady & Partners, which specializes in custom homes. And when arguments do arise during meetings, she politely encourages them to talk it out during a time when she is not being paid to listen. "I often joke that a residential architect needs to have an honorary degree in marriage counseling," she quips. The practitioner must be adept at interpersonal skills because building a house can add stress to a relationship, sometimes even leading to divorce. Architects find that the design decision-making process can dredge up issues in a partnership that had previously been examined. By being sensitive to such possibilities, the architect can help a couple create a house that's truly reflective of both partners' interests and needs.

TODAY, MANY RESIDENTIAL ARCHITECTS ARE MORE FLEXIBLE IN THEIR APPROACH TO PROJECT DELIVERY.

Simon cautions residential architects to be prepared for change in clients' minds that seem to occur unexpectedly. "Marriages tend to have a lot of behind-the-scenes negotiations that don't get resolved quickly," he observes. "The owners will give an initial direction, then later another direction." His best advice is to get sign-offs from the clients at appropriate phases. Despite these obstacles, architects who enjoy residential work feel that the clients are also one of the joys of the building type. "Clients are a source of inspiration," Simon explains, "allowing the exploration to be all the more exciting." He credits the wide stylistic variety of houses designed at Centerbrook to the unique vision of each client.

Structured for intimacy

Duo Dickinson, who heads a seven-person firm, believes a lot of architects go unpaid because of their attitude. "Those architects," explains Dickinson, "conduct themselves as if they are artists and their clients are idiots." He condemns this elitist attitude and argues that the number of projects actually built by an architect will be inversely proportional to the degree of pretentiousness on the part of the practitioner. "You have to have confidence in the people who hired you," he adds. This includes something as basic as always returning their phone calls.

No matter what the size, firms that successfully undertake custom homes have developed internal structures to allow for close, frequent

contact with the client. Dickinson's Madison, Conn., firm does about 60 percent residential work, but he maintains a high level of personal involvement in every project: "I go to the house, do the slide show, speak one on one. All the meetings and site observation will be handled by me, not my office." Large firms will organize the project team so that it feels like a small office. When Backen Arrigoni & Ross accepts a house, for example, one of the partners will begin work with a staff member. Depending on the project size, the team may grow to as many as nine people to develop working drawings, and then shrink back during construction administration. "You can't saddle the project with the larger bureaucracy," explains Beard. "It is more important to have the team lean and responsive."

Negotiating scope of services

Traditionally, architects have offered clients a full scope of services within a design-bid-build delivery method. The architect enters into a contract to provide programming services; undertake schematic design, design development, and construction documents; assist the client in the bidding of documents among several contractors; and oversee construction administration. Many residential architects are today more flexible in their approach to project delivery. Charles R. Stinson, who heads a seven-person residential firm in Deephaven, Minn., prefers teaming up with a builder in the planning stages. He does about 70 percent of his custom homes with one contractor and a group of subcontractors with whom he has had good experience.

Some say that working this way, in which the contractor builds the project for a negotiated fee, is more costly because the subcontractors and the builders don't need to negotiate as hard as they would in a bid environment. Stinson finds that the close working relationship with the builder, Streeter & Associates, also of Deephaven, permits better technical solutions, more suitable product specifications, better cost estimating, and a smoother and higher-quality construction process—which dwarfs the advantages of any cost savings that might accrue from the more-adversarial bid process.

Because some clients are concerned that the negotiated contract may be too high, Streeter has agreed to share bids from subcontractors so that the client can make informed decisions about whether certain materials or assemblies should be reduced in scope to lower the construction costs. The client also knows at the beginning what the percentage applied to a subcontractor's bid to cover the contractor's overhead and profit is. "Building can be a difficult and stressful process," says Stinson. "By resolving as much up front as possible, we save time, energy, and effort."

Working independently for the client

Although Stinson and Streeter work closely together, both architect and builder remain separate business entities. Other architects have turned to design/build, in which a single entity provides both architectural and construction services. These businesses can be led by an architect, a contractor, or some partnership between the two. In this scenario, a client enters into one contract with the design/build firm, rather than two separate contracts with architect and builder. Indeed, many architects have become design/builders because the delivery process gives them far more control over the completed project. Based in Lawrence, Kan., Dan Rockhill designs and builds his own projects because he knows his unconventional use of metal and other materials better than most builders would. Architect-led design/build entails taking on additional risks, but it permits the architects to reap the rewards of being a contractor as well. And some clients appreciate a turnkey approach to their project. (Others, naturally, prefer the checks and balances of a traditional business separation between architect and builder.)

THE PRACTITIONER MUST BE ADEPT AT INTERPERSONAL SKILLS BECAUSE BUILDING A HOUSE CAN ADD STRESS TO RELATIONSHIPS, SOMETIMES EVEN LEADING TO DIVORCE.

In another twist, Mulfinger Susanka Mahady offers a smorgasbord of options. Not only will they do any size project, from a $5,000 bathroom remodeling to a new multimillion-dollar house, but they will provide different levels of service. "The vast majority of houses done by architects are very expensive because the profession is accustomed to doing a high level of detail. But there is a general populace who could benefit from design-solving skills without the detail," says Susanka.

She and her partners will sometimes provide a limited set of drawings from which a trusted builder will work. "We are filling a void. Projects will be less detailed, but a vast improvement over a developer house," Susanka says, admitting there are reasons to worry about not doing a thorough set of drawings. But unlike commercial work, she explains, a builder can in most states construct a house without architect-sealed drawings. She has found that most architects provide builders much more direction than they are accustomed to. By offering more limited services, her firm can reach out to a middle-class clientele that may be intimidated by the costs of full services. "I am sure that legal counsel would tell us it is not smart to be doing less than a full set of drawings, but the facts are there is a vast sector of the market that can't pay for 25 sheets of drawings and the majority of new houses in this country get built from three or four sheets drawn up by drafting services," explains Susanka. Her firm offers a limited set of drawings in two ways: If the client only wants a schematic design, the architects will develop floor plans, elevations, and sometimes sections on no more than four sheets. They do not place the firm's title block on the sheets; they stamp the drawings "not for con-



Backen Arrigoni and Ross was able to bring its non-residential experience to the design of this house and winery for the Staglin family.

Centerbrook Architects does many houses along with its institutional work. Right is a home of several linked pavilions. Key for many residential clients is attention to detail. In this master bedroom (bottom), also by Centerbrook, storage is ample and carefully lit.





struction," and they make sure the homeowner understands that he or she will need assistance from a drafting service or contractor to complete the documents. The architects will also help the client find a builder of high caliber and will sometimes review the subsequent working drawings to insure that design intentions were met.

When clients want a house with more detail than a schematic design can offer, but have their hearts set on a contractor who is not accustomed to detailed drawings, the firm will design a house of simple form, produce a set of working drawings consisting of about 12 sheets, and increase their role during construction to resolve any questions that may arise. In this case, clients may not be saving much money but the architect offers a more effective way to work with the contractor.

In Susanka's experience, the residential market has not been particularly litigious and her firm has never had a legal problem with their limited services. Although she agrees that architects are rightly worried about liability, she also believes that these concerns need to be balanced with the realities of the market. "The profession needs to look at the skills and services we can offer to the residential market and figure out how to best apply them within the infrastructure that exists," she says.

Still, some firms insist on providing a full scope of services. "We like the traditional process for residential," explains Centerbrook's Simon. About 15 percent of the 60-person firm's billings comes from houses. "We have turned down jobs in which we were asked not to participate in construction because we find that it is critical to do the quality of work we want to do."

Work process

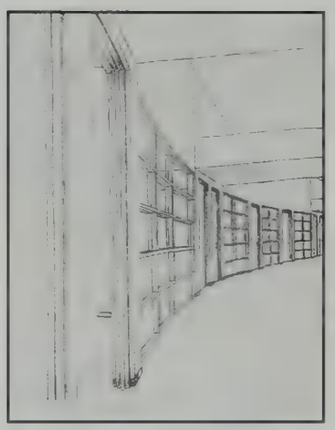
Architects rely on various techniques to ensure that they are most efficiently providing their clients with what they want at the budget they can afford. Susanka begins with two long programming meetings to determine her client's preferences. "The more I can find out about someone's dreams before designing, the closer I can get to what they will like earlier in the process," she says. She asks them not only about the specific rooms they desire but about their daily activities. And she will show images of spaces to determine their preferences in a room's shape and size or a window's placement. During schematic design, Dickinson will show between two and five alternatives. He eschews elegant presentation models, preferring a more modest chipboard representation that can be easily drawn over or ripped up during meetings. In this way, the clients can get more involved in the planning of their house.

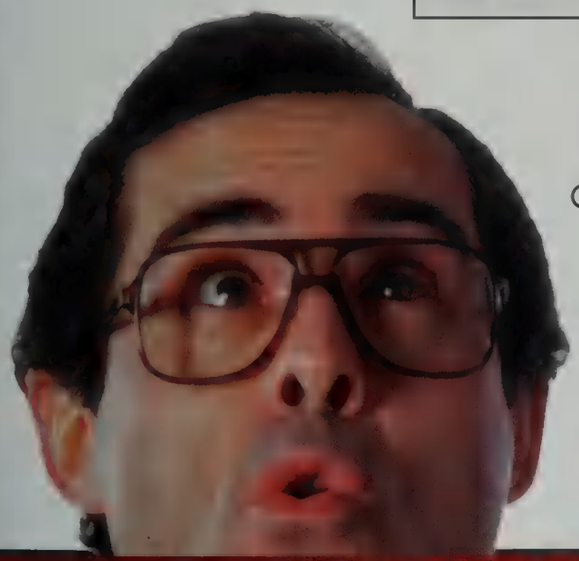
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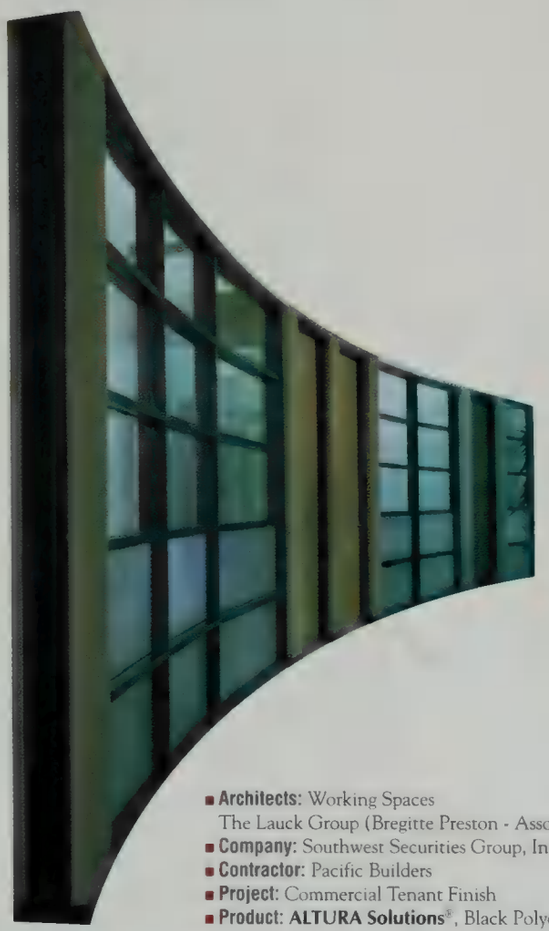
Limiting documentation is critical to residential work, contends Jeremiah Eck, whose seven-person firm in Boston does about 75 percent residential. "It's a real art to know how many plans to do in order to get something done well without intimidating the client or contractor. Allow the contractor to interpret a little themselves," he says. Equally important is getting an accurate idea of cost early in the process. Dickinson sends out 1/8-in.-scale preliminary drawings with door, window, and basic material specs plus essential structural notes and details to several reliable contractors. He requests not only a total estimate but also breakdown prices for the various trades, such as sitework, electrical, and masonry, and specific cost deductions for various alternatives, such as stained clapboard when clear red-cedar shingles might prove too costly. Dickinson uses this information to complete design development. When the actual construction documents are sent out to bid, contractors must detail itemized costs for project components and alternative materials.

When done well, the personal rewards of house design can be great: residential clients often express more enthusiasm about their projects than commercial or institutional clients do. A successful house becomes almost a family member—perpetually entering into stories and lore. Eck conjectures that he could take a trip from Maine to South Carolina in which he stayed only in houses he has designed. ■

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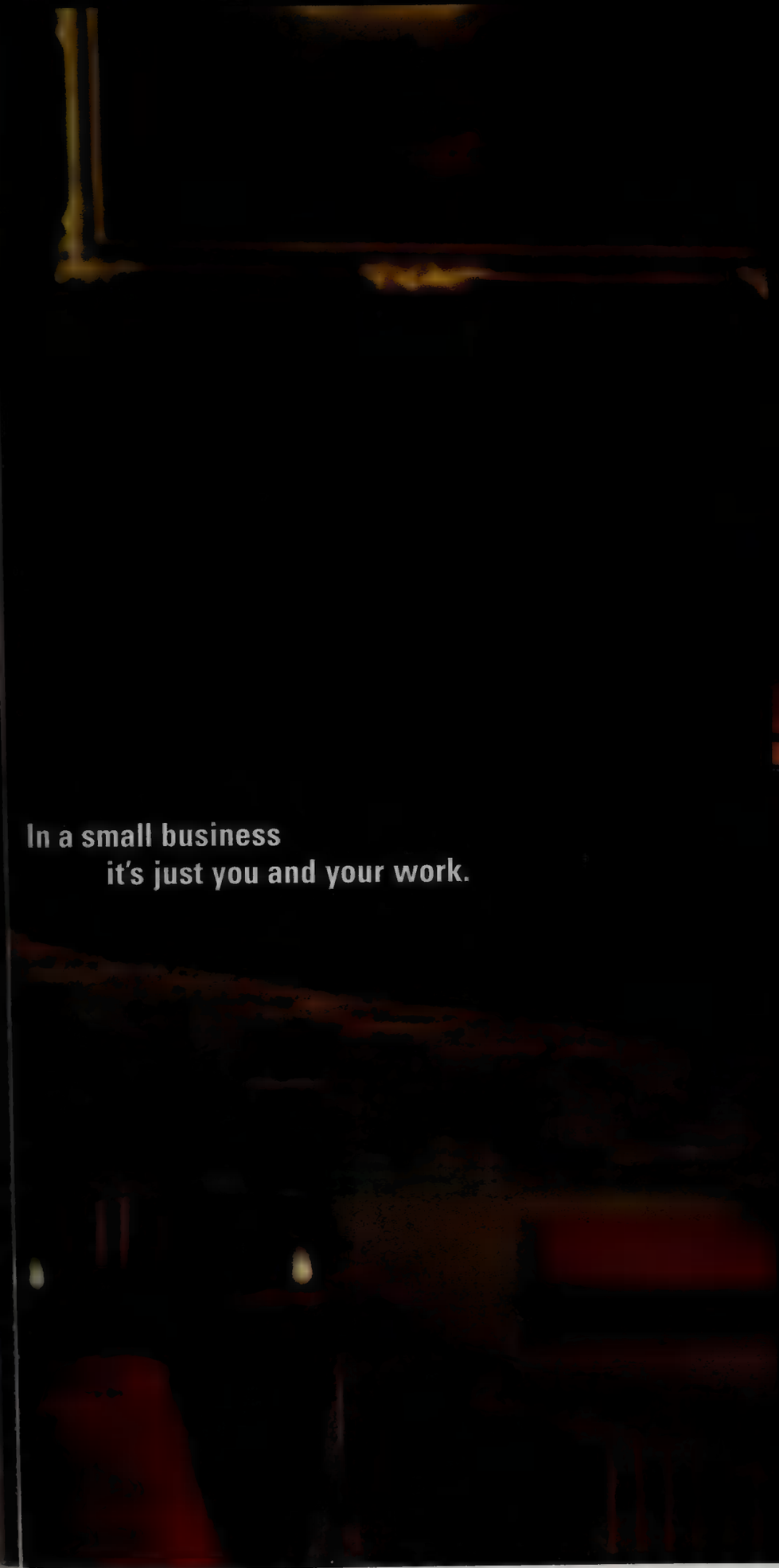
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20. Dimension Style Families allow you to define dimension type differences within one dimension style.
21. Continued dimensioning works for ordinate dimensioning.
30. Easier to modify dimensions.
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33. Create multiple lines of text in leaders.
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40. New ISO compliant hatch patterns included.
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42. Visual representation of linetypes for selection before loading.
51. New FROM object snap can reference a point from within a command.
52. Object Cycling insures that you select the correct object every time.
53. Improved Fillet command can be used to cap parallel lines.
54. Fillet between a line and a polyline.
55. Fillet without trimming the existing geometry.
56. Fillet that doesn't cancel when you miss the object.
57. Chamfer by length and angle.
58. Chamfer without trimming the existing geometry.
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103. Easy to create
custom toolbars.
104. Toolbars can
be docked.
105. Object Proper
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106. Easy to under
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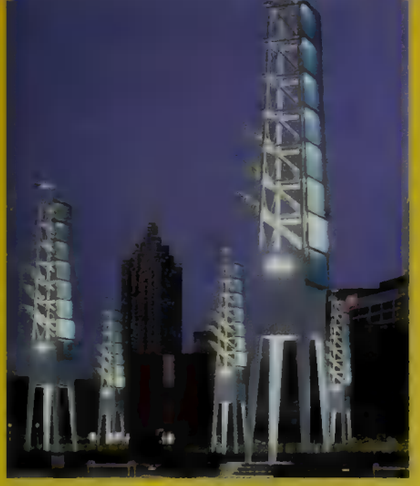
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CIRCLE 42 ON INQUIRY CARD

LIGHTING...



Occasionally over the past few years, RECORD LIGHTING has published articles about the National Council for the Qualification of Lighting Professionals (NCQLP). The nonprofit organization was founded in 1992 to develop a peer-review process to determine the experience, education, and testing requirements for certification in the lighting industry.

After years of hard work, the NCQLP is getting ready to administer its first examination on November 20 at 20 sites across the U. S. To take the Lighting Certification Examination, candidates must have either a bachelor's degree from an accredited college or university and three years of lighting experience, or six years of lighting-related experience. The exam covers the following basic lighting principles and their application: surveying and auditing of existing conditions; lighting design; financial planning; installation and commissioning; operations and maintenance, and regulatory compliance.

The examination will include 100 multiple-choice problems and four simulation problems. Those who pass will be entitled to use the appellation "LC" after their name, meaning they are "lighting certified."

There has been much controversy over lighting certification among architects. This stems from the fear that if the NCQLP's Certification becomes a standard, the state licensing of lighting designers is but a step away, and unless certified, architects might be excluded from designing lighting. This seems farfetched to me, but suppose a state board of technical professions did become convinced that architects involved in the design, installation, and auditing of lighting should be required to show by exam a certain level of knowledge? As long as lighting education in architecture schools is as good as it should be, architects shouldn't feel threatened by lighting certification. If they wanted to be certified, the lighting examination would just become one more thing to study for, and pass. Architects might even view lighting certification as an opportunity.

What's a shame is that I really doubt that many practicing architects could pass the exam cold. I doubt if I could. Unfortunately, most of us have been ill-prepared by our educations to tackle really difficult lighting design problems. If we don't hire lighting consultants to help us, the buildings we design never really reach their full potential. Yet, because there are consultants out there to help us, there is little pressure on schools of architecture to spend more time teaching this vital subject. This is to take nothing away from the fine teaching done by my friends at the Society for Building Science Educators. But perhaps the introduction of lighting certification, which seeks to establish standards of qualification in a field that has never had them before, will make mandatory a more comprehensive teaching of the subject. For more information on the NCQLP, phone 301/654-2121. ■

—Charles D. Linn, AIA

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Above: Light towers at the Georgia International Plaza, Atlanta, by Thompson, Ventulett, Stainback Associates, architects; lighting design by Rosser International, page 148.



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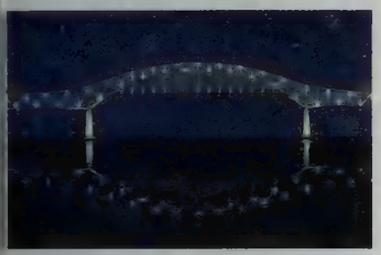
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CIRCLE 43 ON INQUIRY CARD

CREATIVE USES

BRIDGE OVER SPARKLING WATERS

As a part of the reconstruction of the 1961 John A. Blatnik Memorial Bridge, which connects the twin port cities of Duluth, Minnesota, and Superior, Wisconsin, the Departments of Transportation of Minnesota and Wisconsin hired lighting designers Horton • Lees of New York City to light the center-span arch structure. Horton • Lees proposed that the architecture of the structure be emphasized as in the rendering (below left), which shows the lighting concept. 70W clear metal-halide fixtures were installed where the web members connect with the top and bottom chords, grazing the trusses and giving the structure a sparkling quality. Similar fixtures light up the portals. The piers, which support the bridge, have been lit with 1000W metal-halide floods. "The lighting of the piers brings the structure to ground level," says Jules Horton of Horton • Lees. "On still nights, the lights are mirrored by the water below." Crowds gathered on both sides of the bridge when the switch was thrown for the first time on November 21, 1996. The bridge is visible for many miles, and is now the pride of the area. ■





AN ONYX WALL GIVES A NEW GLOW TO THE UPPER WEST SIDE

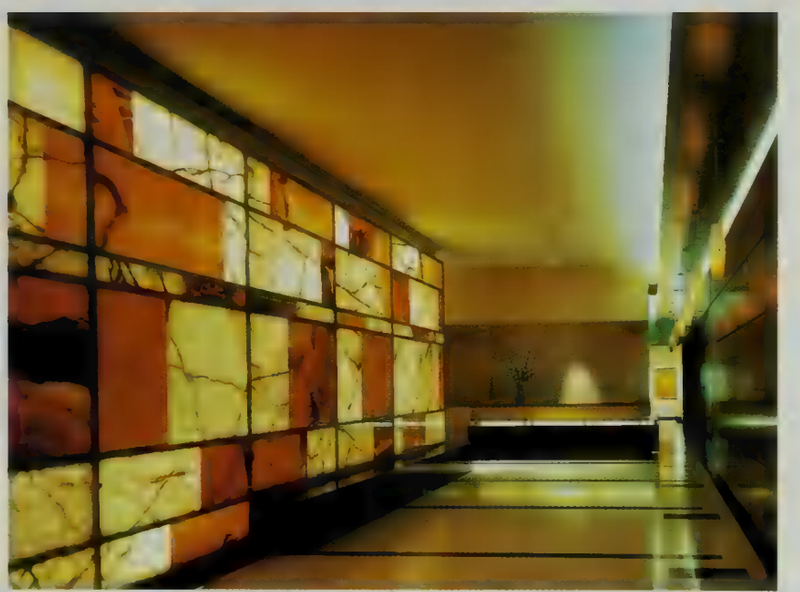
Located on the upper West Side of Manhattan, 1965 Broadway is a new high-end rental building. The lobby, designed by Gary Edward Handel and Associates, is disciplined in its use of space, but opulent in its use of materials. A spectacular onyx wall is the lobby's main attraction. "We try to make our residential lobbies modern," says Handel, "but with warmth and intimacy. This is not easy." In this case, Handel accomplished the task through his choice of materials and in the way they were lit.

"Lighting the onyx wall was the challenge," says lighting designer Ann Kale of Ann Kale Associates. Initially, the architects had planned to use white travertine. But they found that when backlit, the appearance of the stone was too cold. As an alternative they chose a mixture of thin onyx in light and dark shades accented by brown veining. This was installed in what Handel calls a "Mondrianish" pattern. Kale then lit the wall so that it would give off a warm glow during the day, and cast enough light for the space at night.

Working within the confines of a very shallow 9-in. wall cavity, and taking into account access and maintenance issues, Kale specified rows of incandescent PAR16 lamps 9-in. apart, as well as rows of T8 3000K white fluorescent lamps at the top and bottom of the wall. These graze the surface of the stone, backlighting it. The fluorescent fills in the scalloping caused by the spots, and creates a warm, even glow of light. A translucent layer of acrylic on the top of the wall creates a hard shadow line so that the wall seems to float in space.

The flamboyant onyx wall is balanced by a quiet, wood-paneled wall on the opposite side of the lobby. A cavity above this wall conceals cold-cathode fixtures, which reflects off ceiling laid up of 4-in. squares of aluminum leaf.

White-resin pendants with incandescent lamps strung across a dropped soffit off the wood-paneled wall provide a sense of movement, and also emphasize the asymmetry of the space. "The white resin has this translucent quality that echoes the onyx," says Kale. ■





A GLORIOUS FESTIVAL OF LIGHTS FOR B'NAI JESHURUN SYNAGOGUE



A renovation of the turn-of-the century B'nai Jeshurun Synagogue in Manhattan called for the replacement of a damaged, ornate plasterwork ceiling, and a completely new lighting scheme, one that would add mystery and drama to the rituals of worship. The architects, Bromley, Caldari Architects, proposed that the plaster ceiling be removed and replaced with a space-frame that would act as a visual reference to the original structure, and also provide a framework for the lighting.

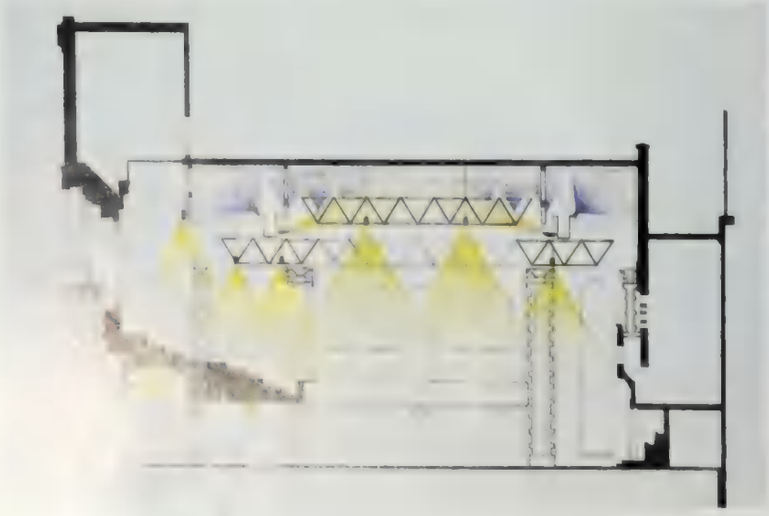
The congregation wanted a more flexible space. The original axial seating with a sloping floor was thus replaced with a flat floor and stack seating that can be arranged in different formations for various occasions. Accordingly, the lighting had to be flexible enough to accommodate these needs.

"We decided we needed four types of lighting," says lighting designer Charles Coster, of Charles Coster Theater Design. "Ambient lighting, accent lighting, architectural lighting—to frame architectural elements—and special lighting to add mystery."

Ambient downlighting for the space (see rendering below) is provided by high-bay pendants with 500W quartz lamps hung from the ceiling. Chosen because of their asymmetrical beam, eight "shovel lights"—fitted with 500W halogen lamps—have been mounted on a catwalk constructed around the space frame. Gelled in amber and aimed at the space frame, these fixtures, along with blue-gelled PAR38 halogen 90W lamps directed at the ceiling, create a dramatic halo above the congregation.

Accents for architectural elements such as arches and coves have been provided by theatrical framing projectors with 575W lamps. All lighting in the synagogue has been programmed to preset "moods" to suit the various uses of the synagogue.

The newly renovated synagogue was opened for worship last Hanukkah, the Jewish festival of lights. ■

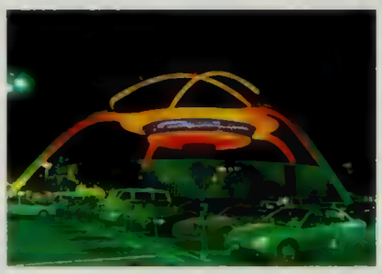


LAX RESTAURANT CHANGES ITS SPOTS

Built in the early 1960's, "The LAX Themed Building" with its skeletal, flying-saucer-like appearance, has become somewhat of a landmark for the city of Los Angeles.

The building is now the site of Encounter, one of the city's newest restaurants. While lighting the building, Michael Valentino, Senior Show Lighting Designer with Walt Disney Imagineering, specified AR500 luminaires by Iridion, a high-output floodlight with an internal, dichroic color-changing mechanism. The fixtures have been mounted at the base of the central core of the building radiating outwards, so that the building appears to float in space.

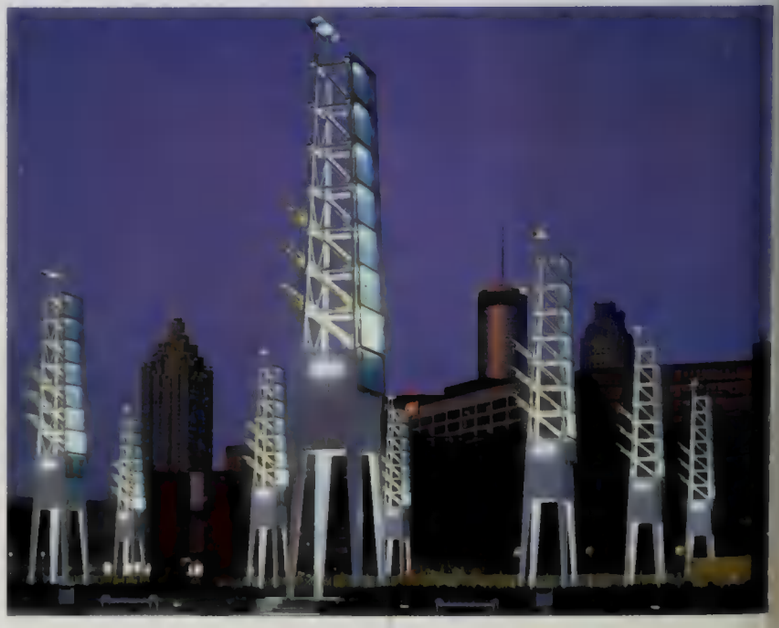
Every 15 minutes, there is a small, spectacular show of color, and then the building does a slow fade into a different color. ■





SENTINELS OF THE INTERNATIONAL PLAZA

A grid of 16, 110-ft-tall light towers stand like silent sentinels over the Georgia International Plaza. Designed by Thompson, Ventulett, Stainback Associates of Atlanta, with lighting design by Rosser International, the towers' function was to light up the plaza and define a place for concerts and public meetings during the 1996 Olympic Games. Each tower contains 11 metal-halide fixtures. One 1000W spotlight directs light above the towers. Two 400W metal-halide fixtures' beams cross to light up the glass panel "shelves", and other architectural elements in each tower. Two slots in the middle of the towers have been fitted with 400W downlights for the plaza, while four 100W metal-halide wall bracket fixtures installed in the tower support legs illuminate the area under and around the tower. ■

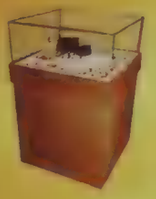




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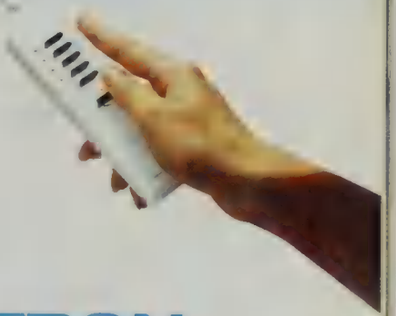


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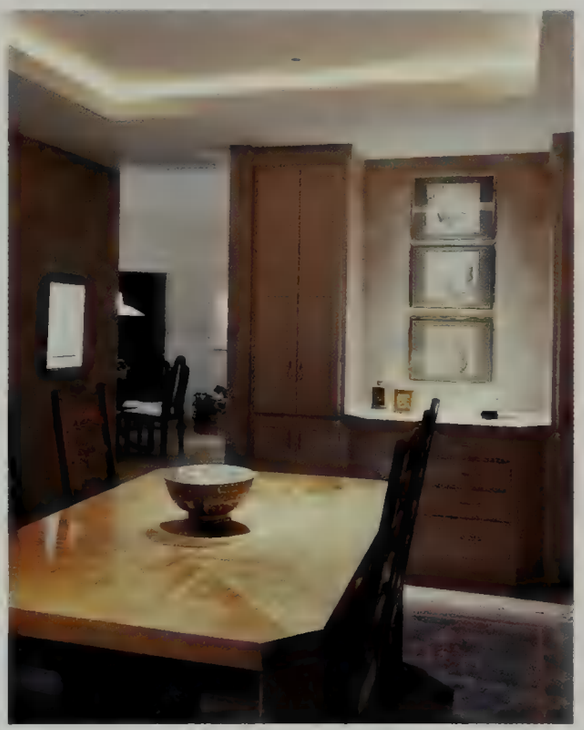
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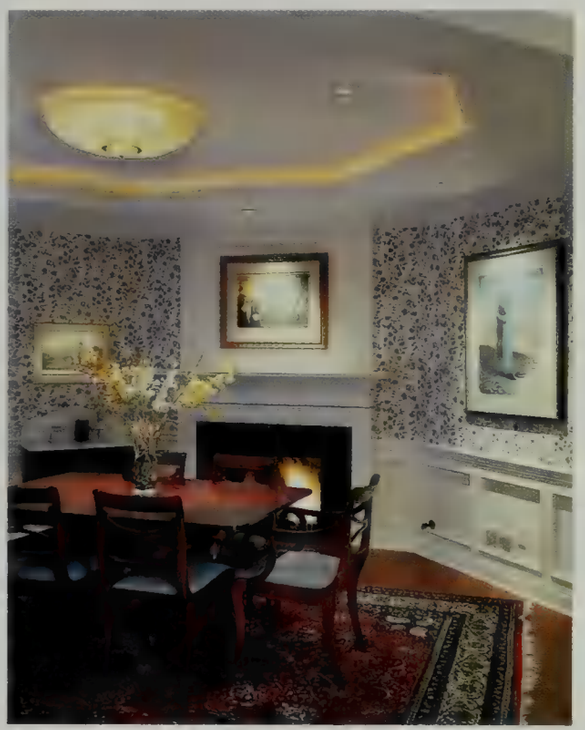
CIRCLE 45 ON INQUIRY CARD

A Consultant's Primer: Lighting for Kitchens and Dining

By Steven L. Klein and Jane M. Klein

It's time to update or even discard conventional wisdom about lighting for kitchens and dining areas. Once separate rooms with their very own distinct purposes, these spaces have grown and blended together. The idea of a dining room as a formal space, and the kitchen as a utilitarian workspace for servants, is obsolete as far as many clients who commission residential lighting are concerned. Many want dining areas that flow into open kitchens—often enormous gathering spaces at the heart of the home.





Uninterrupted lines of warm incandescent light divide the ceiling planes (above left and right), layering the area above the dining tables. The tables are cross-lit without spill by narrow-beam MR16 lamps in adjustable, pin-hole aperture downlights so the table-tops have the appearance of a self-luminous surface.

Dining in style

But some clients may still insist on a formal dining room. The dining rooms shown here illustrate what can be accomplished when lighting and architectural details are used to define space. In these dining rooms, luminous coves are part of the answer. Coves work because perimeters define space. To make a narrow space appear wider, direct light to the walls; to make a low ceiling seem higher, direct light to the ceiling.

Chandeliers are a holdover from the days when formal dining rooms were the rule. When correctly used, chandeliers should be suspended over the center of the dining room table, and proportioned appropriately for the room and the table. But no matter how beautiful these fixtures may be, they impose limitations—they tend to redefine the visual height of a space because of their brightness patterns. As a suspended object with space above and below it, a chandelier tends to light the whole room, making it impossible to exploit light's great potential for reinforcing and revealing the architecture and enhancing function. It can easily become imposing, drawing attention to the center of a room, which may not always be where social interaction is taking place.

However, in a cove-lit dining room (above left and right), concealed lines of light organize the ceiling's relationship to the table below, and the depth of the cove is enhanced because the lower ceiling is silhouetted against the higher one. Light reinforces the separation, and the upper ceiling appears to float, with its brightness confined to a specific and well-defined area. To successfully light a cove, it is important to have an even and continuous line of light. Although neon, cold cathode, side-emitting fiber-optic cable, and staggered fluorescent are sometimes used, 12V and 24V incandescent-light rails are preferable because of size, simplicity of installation, and their warm, familiar color.

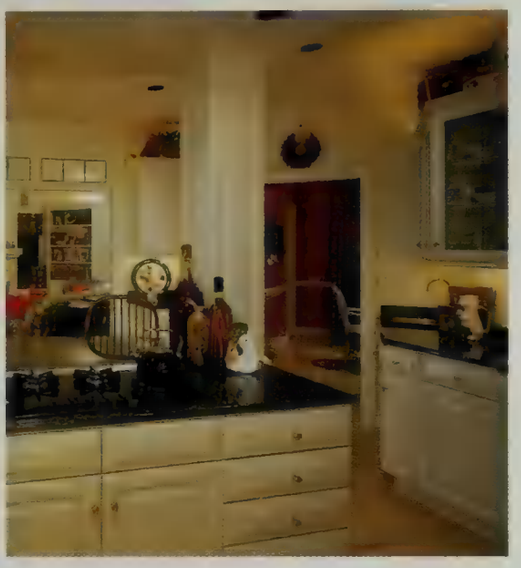
When a client prefers to use a decorative fixture in combination with cove lighting, close-to-ceiling fixtures (above right) can fulfill the function of a chandelier, but without the imposition. More to the point, some close-to-ceiling decorative luminaires create a refractive light pattern on the surrounding ceiling that seems to expand the luminaire. The fixture itself doesn't have to be big to create a big impact.

A dining room table can be made to appear self-luminous by cross-lighting it with recessed low-voltage adjustable spotlights. The ultimate benefit of this technique can be seen when the table is set with cloth, glassware, plates, and silver—the tabletop glitters in a spectacle of sparkle and shadow. Five-inch pinhole apertures are a particularly good choice

Steven L. Klein is a lighting consultant for Standard Electric Supply Co. in Milwaukee. He frequently consults with his wife, Jane M. Klein, ASID.







Black Alzak-cones in downlights (above) completely eliminate glare at the ceiling plane. A-19 lamps in open reflector downlights cover lots of horizontal space.

because the faceplates blend into the ceiling plane. Narrow-flood 50W MR16 lamps are perfect for the application if the fixtures are correctly aimed and well-maintained. Great care must be taken to ensure that the beam spreads are cut off below the line of sight of anyone seated at the tables; simple hex-cell louvers that pop into the fixture may be needed to help control this unwanted brightness. When lighted artwork is used in a dining room, the same type of pinhole spotlights can be used to light it. Beam-elongator accessories help make these accent lights more sympathetic to framed art than the scallops projected by some fixtures.

Gathering around the hearth

Both dining rooms and kitchens ought to be places where people assemble to enjoy each other's company. The same lighting fundamentals that apply to dining rooms also apply to kitchens. The expansive island dominating a large kitchen and dining area (opposite and above left), is an example of lighting being fully integrated into the architectural details. The architect of this kitchen was striving to achieve an honesty of form, and the "halo effect" of the light cove was accomplished with pure, logical detailing, although actually building in the 24V light-rail wasn't an easy task. The only difference between this kitchen cove and the dining room coves on the previous pages is that in the kitchen, the brightness pattern on the ceiling is not confined to a well-defined area, but silhouettes the form of the curved soffit and compliments it. Clear alzak-cone aperture downlights with very narrow floods provide task lighting on the countertop without glare or light-trespass into other areas.

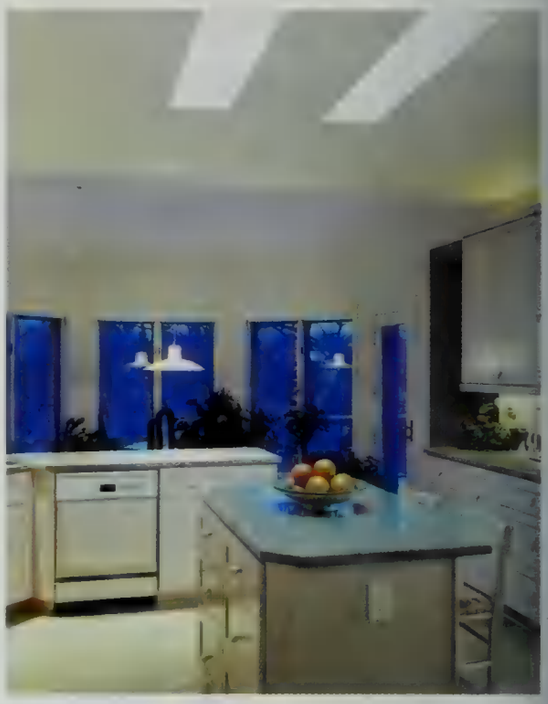
Just as cove lighting can help to define and enhance architecture in a dining space without imposing formality, overcabinet lighting can do the same in the kitchen. Kitchen overcabinet lighting may not be as familiar to designers as undercabinet lighting. Both can play a vital role. Overcabinet lighting guides the eye to a truer appreciation of ceiling height, in a room where cabinetry and ceiling often blend together in a dim blur. A pleasant glow at the ceiling perimeter also offers a source of low-level ambient lighting for transitional scenes, such as when people drift in for evening conversation, or paperwork, and snacks.

Low-voltage incandescent strips are ideal for mounting both over and under cabinets. Holding the specification may require some extra knowledge and effort. Otherwise, the electrical contractor may substitute poor-quality fluorescent strips—and probably at the wrong place. Linear low-voltage strips should be installed at the front edge of the cabinet. This is critical to hiding the light source, which prevents glare and lamp imaging. The lighting consultant should coordinate this detail with the millwork designer to ensure that a shielding valance of adequate depth is specified. In the undercabinet position, the lamps should be aimed at the counter's backsplash.

THE RELATIONSHIP BETWEEN A CLIENT AND THE HOUSE THEY ARE BUILDING IS DIRECT AND INTIMATE, MAKING THE RESULTS THAT CAN BE ACHIEVED THROUGH LIGHTING EXTREMELY REWARDING.

It's important to mind the concerns of contractors and inspectors when specifying low-voltage lighting, especially when the components of a system come from different manufacturers. The lighting consultant should write full specifications requiring UL-labeled components. It may be appropriate to approach the inspector for pre-approval, rather than waiting until the contractor's materials are ordered and even partially installed. A remote transformer can be located in the basement or pantry as an alternative to the cabinet. To prevent voltage drop along





The trick to designing faux skylights is to frame the opening above the finished ceiling line. This breaks up the ceiling plane and makes the "skylights" appear to be higher.

the string of lamps, and thus ensure uniform brightness and color, specify that a #12 double-conductor-stranded wire be run between the transformer and load. Using a Class III-rated conductor can ease approval from inspectors, and contractors appreciate eliminating junction boxes.

For high-activity food preparation and socializing, kitchens need task lighting on work surfaces (downlighting and undercabinet lighting) combined with bright, diffuse ambient lighting. Improved-color fluorescent lighting can solve the ambient problem perfectly. Surface-mounted fluorescent fixtures might give the impression of cheapness, but homeowners love skylights. So, imitate a skylight by using a fluorescent light box recessed in the ceiling. The "skylight" fixtures shown here have a 2-in. recessed edge and are actually tucked between the second-floor joist spaces on 16-in. centers. The interior of the box is painted white to reduce light loss. Each box has two side-mounted fluorescent strips to increase the distance from a 3/16-in. matte opal diffuser, thus minimizing lamp images in the diffuser. Full-s dimmable ballasts enable the client to adjust the "skylight" brightness to suit the situation.

Open-reflector downlights lamped with ordinary A-19 lamps [illegible] to provide ambient light unobtrusively, and the fix- [illegible] and easy for the homeowner to maintain. Black [illegible] distracting glare at the ceiling plane.

[illegible] needs for clients

[illegible] custom-built fixtures installed, and [illegible] recommendations, deserve credit for taking a leap of faith. These clients may not have much experience visualizing architecture or interior design, but their relationship to the project is direct and intimate. For them, the results of good lighting are rewarding because light is such a potent way to communicate basic emotions. ■

Project credits

•Project: *Residence, name withheld (photo page 103, right)*
Architect: *Lakeside Development Co.—Richard Sherer, Jeffrey Van Loon*
Interiors: *James Mark Connelly*
Lighting Designer: *Steven L. Klein; Lynn Howard, project manager*
Ceiling fixture: *Barovier and Toso*
Recessed fixtures: *Lightolier*
Cove lighting: *Celestial Lighting*

•Project: *The Luck Residence (photos page 103, left, and this page)*
Interior designer: *Bill Manly Associates*
Lighting designer: *Steven L. Klein*
Recessed adjustable downlights and framing projectors: *Lightolier*
Light rails: *Celestial; Lightolier*
Pendants: *Leucos*

•Project: *Residence, name withheld (photos page 104 and page 105, left)*
Architect: *Lakeside Development Co.—Richard Sherer*
Interior Designer: *Sturgeon Interiors—Joann Sheridan*
Lighting Designer: *Steven L. Klein*
Light rails: *Ardee International*
Recessed downlighting: *Lightolier*

•Project: *Residence, name withheld (photo page 105, right)*
Architect: *Lakeside Development Co.—Richard Sherer, Jeffrey Van Loon*
Lighting Designer: *Steven L. Klein; Lana Nathe, associate*
Light rails: *Ardee International*
Recessed downlighting: *Lightolier*

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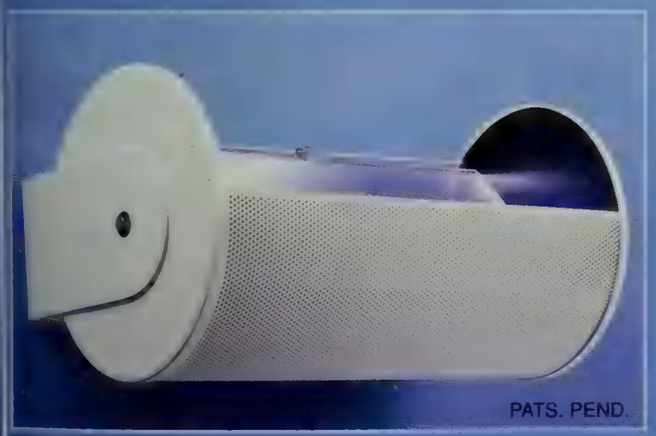
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The perforated metal side diffuser, pictured above, [illegible] available with Optika.

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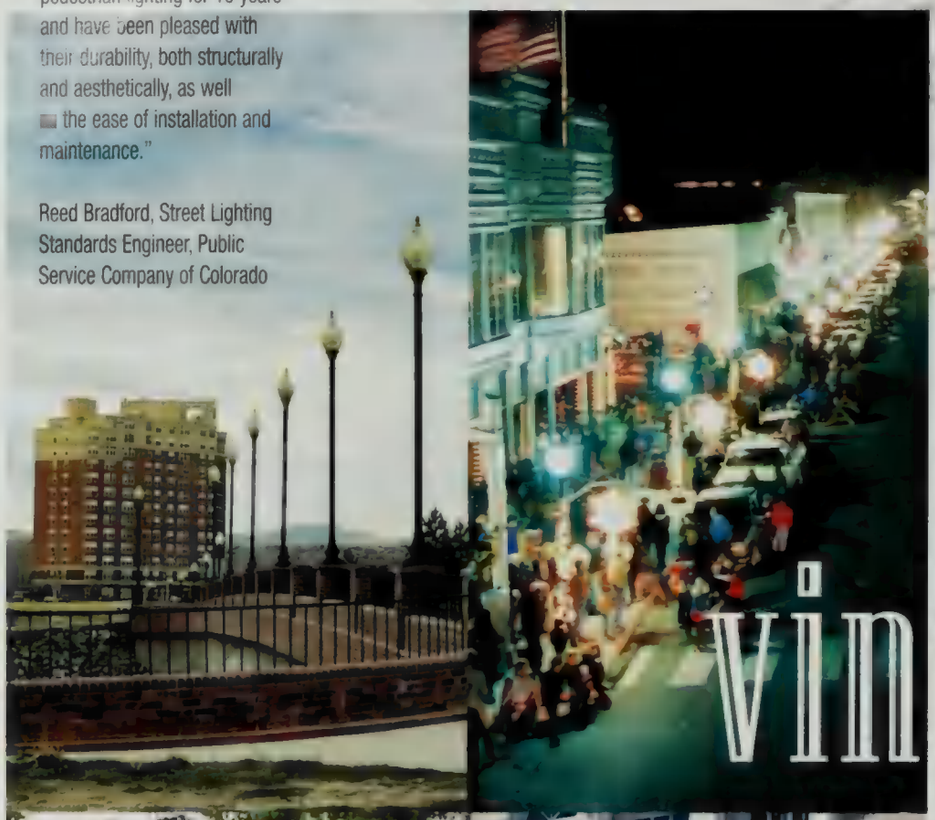
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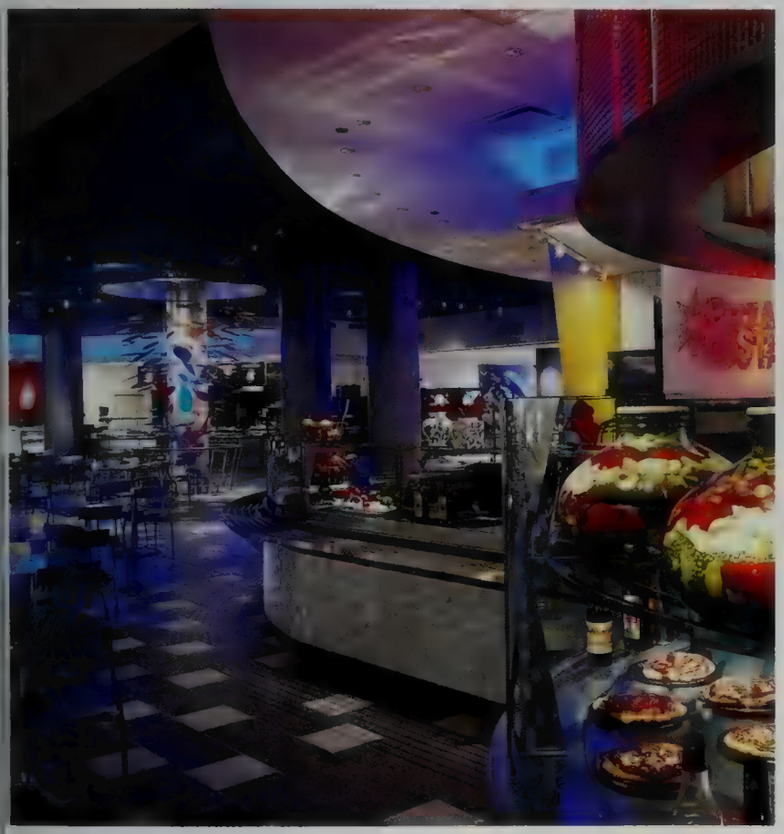
Frank Murphy, Project Manager

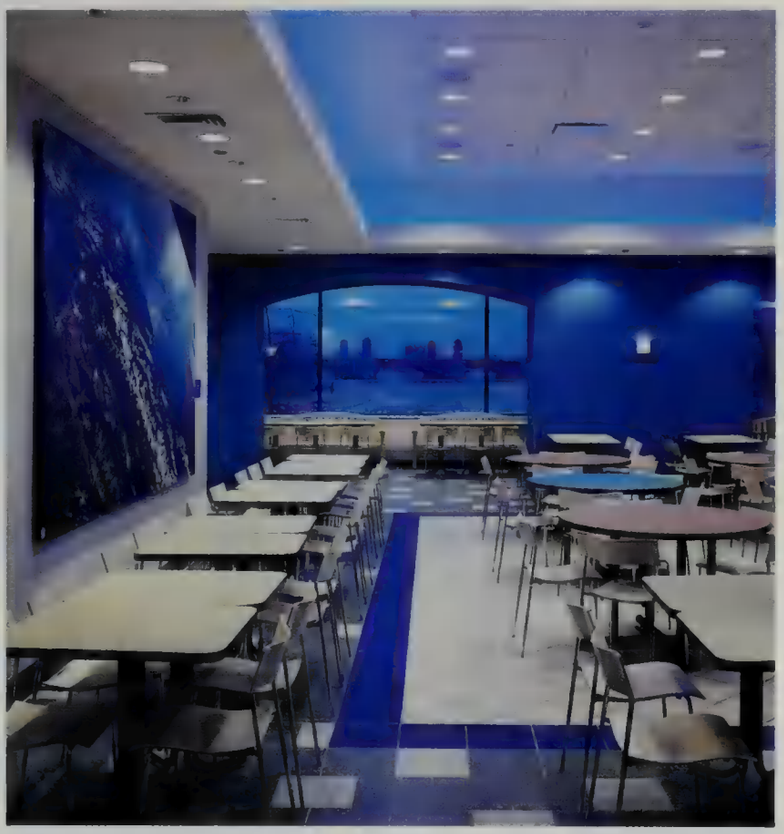
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CIRCLE 49 ON INQUIRY CARD

Galactic Gourmet: Boston's Museum of Science Gets a Star-Studded Café

by Nayana Currimbhoy





At Boston's acclaimed Museum of Science, a popular new exhibit—and an interactive one at that—is the Galaxy Café. Designed by Cambridge-based Prellwitz/Chilinski Associates, with lighting design by Craig A. Roeder Associates, the restaurant was conceived to be an extension of the museum experience, a space that would elicit in the children a sense of wonder at the culinary workings of the world.

The museum initially had three separate and rather dingy eating spaces. They were scattered throughout the museum complex, and unable to meet the demand for food. This resulted in whining, hungry kids in long lines for hot dogs, a frustrating interruption of the museum experience. Finally, the museum management decided to consolidate the different eateries into one large, 12,000-sq-ft restaurant with a view of the city and the Charles River. Besides offering a wider choice for parents and children, the arrangement would result in shorter lines at food counters. The resulting Galaxy Café consists of the Starlight Deli, featuring delicatessen-styled food in a 1950's diner motif; the Boston Grill, which has grilled meats; the Pizza Gusta, which presents a mix of freshly made pizza and pastas; and Galilio's, which offers a variety of desserts and snacks. The idea was to make eating an enjoyable and relatively healthful experience for parents and children alike.

A joint venture between the Museum and Sodexho, one of Boston's leading food services, the Galaxy Café is designed to treat food preparation and service as an educational experience. Cooking is exhibited in a series of display kitchens and bakeries. The ingredients are there for all to see, much like the experience of a modern market. Pizzas are prepared behind a glass wall, salads are tossed in a playful "salad bowl"

Nyana Currimbhoy is a New York City freelance writer, who frequently writes about architecture, interiors, and lighting design.

Project: *Galaxy Café at the Museum of Science, Boston, Massachusetts*
Client: *Museum of Science and Sodexho Food Service*
Architect: *Prellwitz /Chilinski Associates—Wendy Prellwitz, design principal; Bill Whitlock, project architect; Jessica Russell, Susan Greco, designers.*
Lighting consultant: *Craig A. Roeder Associates, Inc.—Craig A. Roeder, Robert Mapes, and George Balle, design team*
Sculptor: *David Tonnensen*



The food court and its 500 chairs thread their way through the columns (right). Illuminated by twinkling fiber-optic "stars," a dark, midnight-blue sky spreads out from the beam-me-up-Scotty central column by artist David Tonnensen (far right).

counter, and the bakery window provides a view of freshly baked bread coming out of the oven. The new 12,000-sq-ft eatery seats five hundred hungry museum goers.

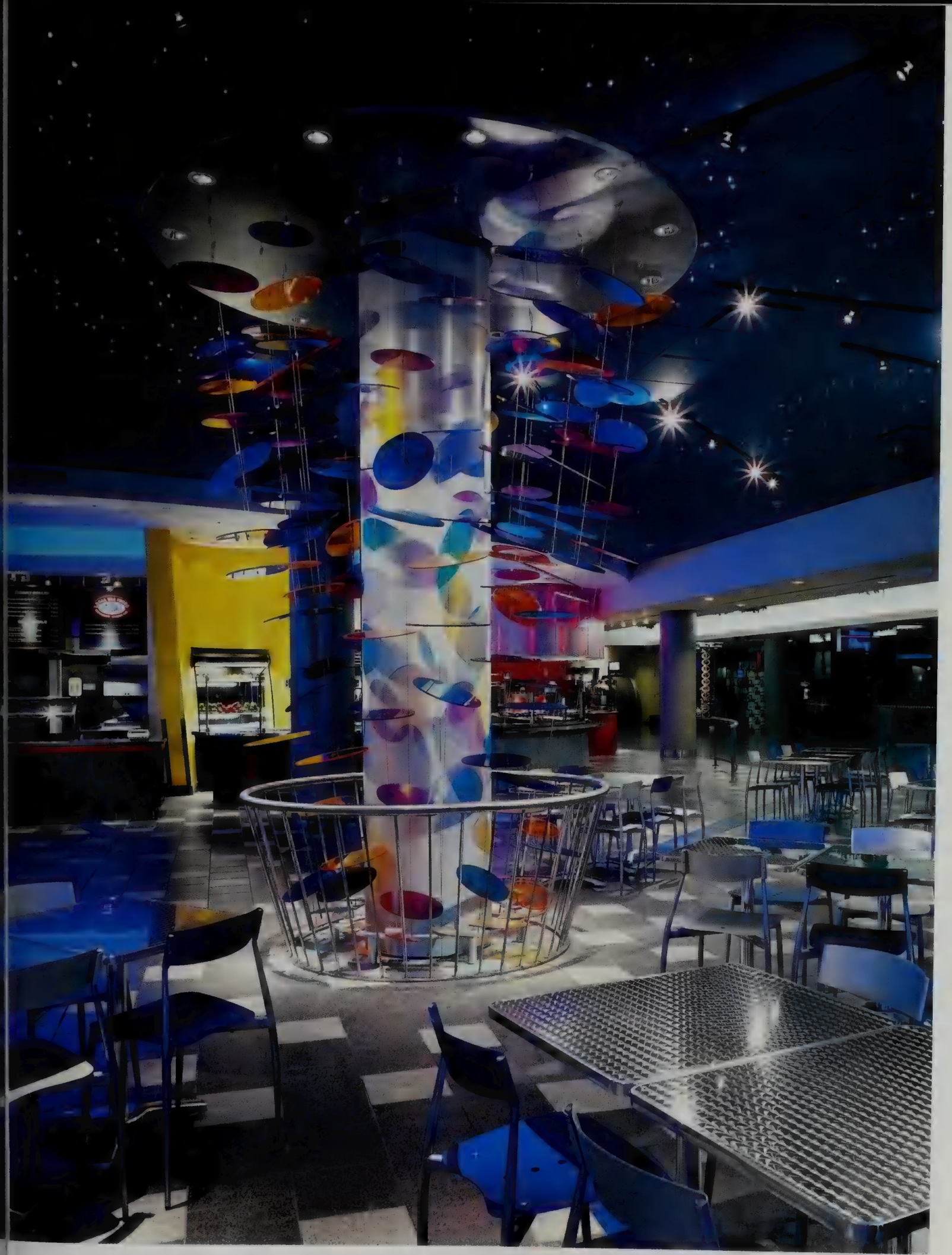
The Science Museum was established in the 1940's in a landfill area off the Charles River, and has grown gradually since so that it now spreads over many buildings. The area earmarked for the café was actually carved out of three different buildings. As a result, the architects had to demolish quite a few load-bearing walls, leaving the space a maze of columns. "There was this one central column that would just not go away," says Wendy Prellwitz of Prellwitz/Chilinski, "so we decided to make it integral to the design."

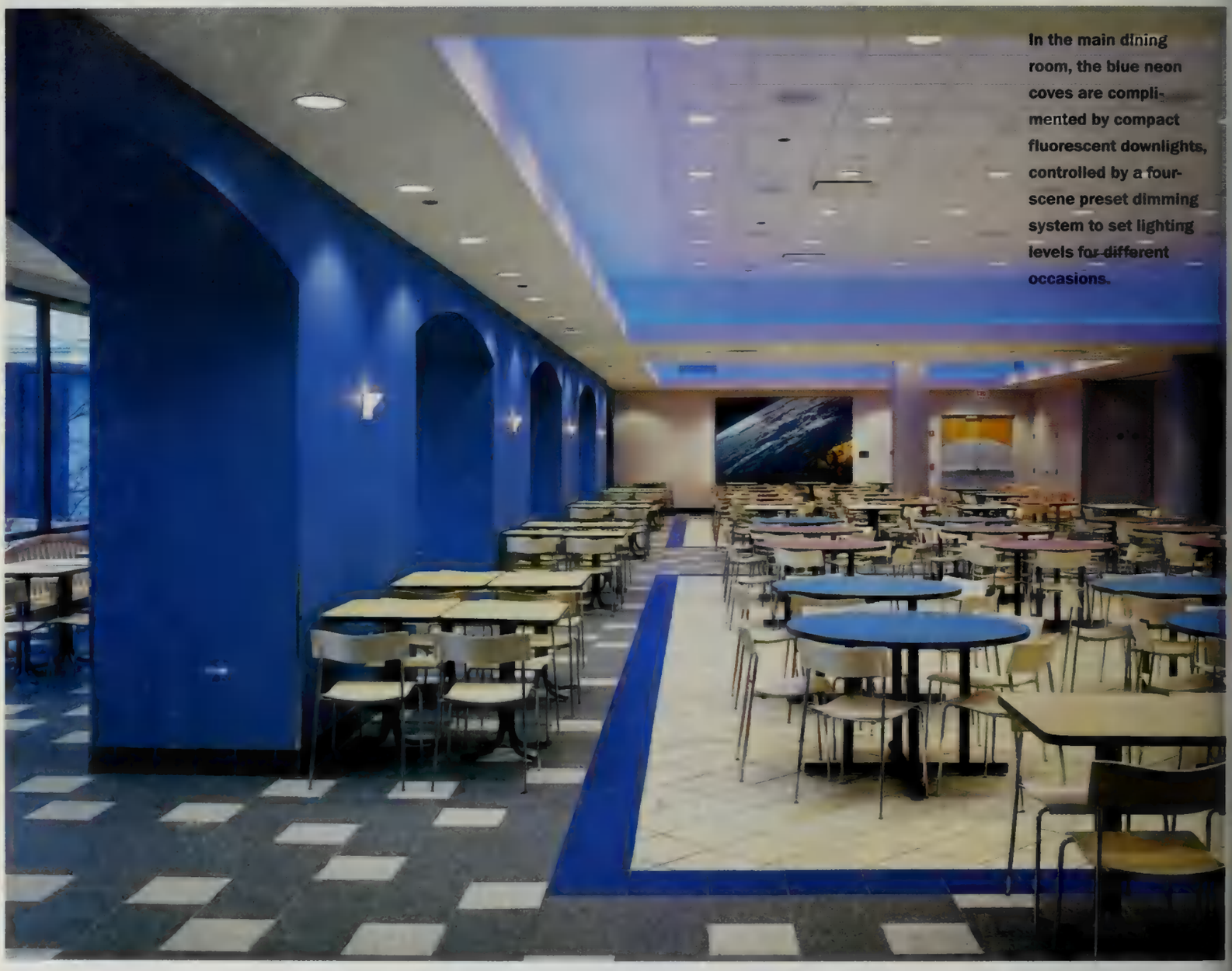
THE GALAXY CAFÉ, A JOINT VENTURE BETWEEN THE MUSEUM AND ONE OF BOSTON'S LEADING FOOD SERVICES, IS DESIGNED TO TREAT FOOD PREPARATION AS AN EDUCATIONAL EXPERIENCE.

Now the focal point of the different eateries, this central column has been turned into a colorful, light-scattering sculpture that symbolizes the theme of the Galaxy Café. "Since the café is located near the planetarium, we wanted to continue the outer-space theme," says Prellwitz. The solution, worked out between the architects, lighting designer and sculptor David Tonnensen, consists of a metal-[illegible] topped by a large metal cap, both painted with a [illegible] paint that is similar to the coating that might be found on a movie screen. Brightly colored Plexiglas disks are strung onto aircraft cables surrounding the column. The cables are stretched from the floor to the ceiling. Each disk sits on a custom-designed piece of hardware that clamps onto the cable so it cannot slide down, but are otherwise not fixed to the cable. Disks are free to rotate if they are touched in this semi-interactive display. Narrow-beam MR16 spots are recessed into the opalescent disk that caps the column, and shine through and reflect off the Plexiglas disks, making the disks luminous as they scatter mysterious pools of light into the surrounding area.

The sculpture is set in the center of a glittering fiber-optic galaxy, built of points of light that radiate from the column's vertical axis. The effect is created by pushing the individual cables from a fiber-optic bundle through the deep blue-painted ceiling material. A metal-halide fiber-optic cable illuminator provides the necessary brightness to make the scheme work.

A fairly simple idea has thus, in the words of the enthusiastic Roeder, been turned into "the holographic-deck dining experience. And," he adds, "these are definitely not the usual constellations. You are dining beneath a quasar."





In the main dining room, the blue neon coves are complimented by compact fluorescent downlights, controlled by a four-scene preset dimming system to set lighting levels for different occasions.

"Children are quite fascinated by it; they love to touch the disks, and that's fine, although we had to put in a railing around the sculpture to prevent the really young ones from grabbing at it," says Prellwitz. In the eating area immediately surrounding the sculpture, low-voltage MR16 track lighting, on track which radiates from the columns, lights the tables. At the walls, neon—seven shades of it are used on this job—is concealed in coves.

The open food preparation areas have been illuminated like works of sculpture. Roeder used aimable 3000K, very-narrow-beam MR16 spots to light the food counters, which were built lower than usual to make them more child friendly than standard-height counters. Recessed compact-fluorescent downlights fitted with louvers are used to light the cooking areas. Roeder prefers using louvered rather than open downlights because they shield glare from the side of the downlight as well as directly from the lamps themselves. The downlights with 26W 3000K lamps whose 3000K color matches that of the MR16s light-

In the different dining areas, bright blue neon is concealed in coves. 50W 3000K compact-fluorescent lamps are used in louvered downlights over the tables. Because this room is used for public dining in the daytime, when high light levels are desirable, and fund-raising activities at night, when lower levels would be preferred, the neon and fluorescent lights are circuited to a four-scene preset dimming system that allows the proper levels to be set for these occasions. An arched blue wall punctuated with compact fluorescent sconces frames a spectacular view of Boston city and the Charles River. On the outer walls, large, 7-by 11-ft photographs donated by NASA offer views of earth from space.

"We wanted to create a fun space. We wanted a space that would appeal the children, and bring out the out the 'inner child' in adults," says Roeder. "The museum management was very supportive," adds Prellwitz, "although the budget was limited, the director was as determined to get as much into the space as we were." ■

Manufacturers' Sources

Recessed lighting: *Halo*
Fiber optics: *Fiberstars*
Neon: *NeNeon*
Track lighting: *Halo; Lightolier*
Wall sconces: *Neidhardt*
Lamps: *General Electric*
Preset dimmers: *Lutron*


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SO MUCH IS POSSIBLE WITH TODAY'S RESIDENTIAL CONTROL SYSTEMS THAT OFTEN THE PROBLEM IS TRYING TO DO TOO MUCH. AVOID SYSTEMS THAT ARE TOO COMPLICATED TO BE EASILY USED.

by James R. Benya

Deciding which control system to use in residential lighting design has gotten to be a rather complicated problem. Frankly, there isn't much you can't do. Even the basic four-scene preset dimmer—one can set four lighting "scenes at the touch of a button"—has become commonplace. The real problem is matching the requirements of the home with one of the many options, keeping your client's pocketbook and level of technical prowess in mind. More than anything else, the best advice in choosing a system is to begin with simple, intuitive approaches and gradually add complexity until the client's technical limit is reached. The power and capability of modern controls make it possible to design systems that can be too hard to learn. Remember, the lighting controls need to be operable by all members of the family and guests, not just the technically savvy teenaged computer nerd.

Upgrading from switches

Most clients will want to upgrade from wall switches to some type of dimming. Often consideration will also be given to upgrading the switches themselves. For homes up to about 3,000 sq ft, and especially for retrofitting existing homes, this is probably the best approach. The first big step in upgrading is to choose a family of products with the right appearance for the home. The trend is toward the "decorator-style"—rectangular devices which include slide dimmers, large rocker switches, and matching receptacles.

Premium devices typically offer their own unique styles, including touch switches and discreet dimmer controls. For the energy-conservation minded, motion sensors, and sensor-dimmers often are made to match the rest of the system. Most switches and plates are plastic, but it adds a touch of elegance (and expense) to use devices with metal plates and, in some cases, metal touchplates. All can be specified to match interior hardware and detailing. But don't focus exclusively on style; keep technical requirements in mind. When ganging devices, be certain to use plates designed specifically for the number and types of devices needed.

For those restoring older homes, there are modern reproductions—with current UL listings—of traditional push-button switches. It is possible to buy a new dimmer control designed to look like a control made in the early 1900's. And of course, the standard snap-switch remains available, as do many styles of classic rotary dimmers, with plastic, wood, and brass plates to meet a variety of functional and decorative needs.

[illegible] it's easy to replace regular wall switches with [illegible] remote control. These products range from low-[illegible] infrared remote-controlled dimmers. Remotes are ideal for renovations: wouldn't it be nice to dim the bedroom lights without getting up? A few systems also permit you to activate one or more lights from a remote that you might have in your car. The next step up—and it can be a pretty big one—is to add scene-preset dimmers. Most of these products have a single box containing four dimmers. They enable the user to select among four pre-determined lighting scenes, each a combination of settings of the four dimmers. Preset dimmers have the primary benefit of cleaning up and simplifying complex dimming systems. Scene preset dimmers are particularly good for rooms with multiple lighting systems, such as living rooms, family rooms, great rooms, and large kitchens.

Without presets, a busy room with multiple entrances and functions has the potential to become a real switching mess. The typical preset dimmer is a four-gang device with single-gang remotes. Some current products include built-in infrared remote control; all you have to do is buy the remote itself. Locate the main device at one of the entrances to the room and remotes at the others. One way to reduce the cost of scene-preset dimming is to employ dimmers that can be mastered onto a scene selector controller. This modular approach allows for up to 10 dimmer channels. It works much the same way as any other preset dimmer. Just keep in mind that one gang is needed for each dimmer, plus one for the scene controller.

Using master systems

Master systems work with switches, dimmers, and scene-preset dimmers. Each device "on the system" can be controlled normally or from master control stations, which are typically located in the master bedroom and by the exterior entrance generally used by the family. The master stations display the status of each switch or dimmer, and allow them to be turned on or off individually or all at once. Some master systems are intended primarily for manual operation; others include automatic functions keyed to the time of day. Master systems offer two primary advantages: convenience in turning off lights when going to bed, and an added measure of security. The lights can be



Today, almost every conceivable type of control device is available in "decorator-style," that is, in a rectangular shape. The device in the photo above is a motion detector.

[illegible] TALD, is a principal with Pacific Lightworks in Portland, [illegible] lighting design service for commercial and residential lighting [illegible] designing lighting control systems for the past 15 years.



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activated automatically by a burglar alarm or manually by the resident when something goes bump in the night. For these reasons, master systems are recommended for larger homes (3,000-7,500 sq ft) and for homes in which security is a special concern. Keep in mind, though, that a master system adds an expense over and above the cost of ordinary switching and dimming. If you choose a master system, you can keep costs down by limiting the number of zones connected to it. For starters, do not connect bedrooms, bathrooms, closets, or other private spaces to the system, unless there is a special desire to control lighting remotely in one of these rooms. Avoid connecting fans and other loads.

WHOLE-HOUSE SYSTEM RELIABLILTY WAS A PROBLEM A DECADE AGO, BUT IT'S NOT REALLY A CONSIDERATION ANYMORE. MOST MANUFACTURERS HAVE BACKUP MODEMS TO HELP RESTART SYSTEMS.

Combine lighting zones in logical ways

The lighting zones should make sense."Front exterior lights" might include the porch light, post light on the front lawn, and front landscape lights. Most homes can work well with 10 zones: living room, dining room, kitchen, foyer, hall, garage, front exterior, rear exterior, utility/basement, and one other zone. Adding a master system to an existing house can be done in one of three ways. The easiest and cheapest way is to use power-line carrier controls, which simply plug in and send control signals through the house's power wiring. But signal strength problems have made these systems unreliable, especially for larger homes. A new system that employs modern digital radio-frequency communications is a better answer, although cost may be an obstacle. Hard-wiring is a distant third choice, as getting wires through an older home can be almost impossible.

Whole house systems

At the high end of residential lighting control, a whole house system is wired more like a theater than a house. Dimmer cabinets, each containing 16 to 24 or more dimmer channels, are located throughout the home. Each room then has lighting control stations with push-buttons. The power of the whole house system is that each button can be programmed to whatever function the client wants. Some stations may have one button: push on, push off. Others may have multiple presets. And some stations might even activate multi-room or whole house presets, such as "morning," "evening," and "night." A "party" setting might set all the lights on the exterior and in the non-private rooms of the house, simply with the press of a button. Whole-house systems are particularly suited for mansions and very large homes (over 7,500 sq ft). A whole-house dimming system might seem overly complex for a small home, and yet the system has many advantages. Its features may be exactly what a more demanding homeowner seeks.

The products now on the market have evolved over many years to satisfy sophisticated clients. Most systems have elegant audio-video control and compatibility. Automatic functions can be easily interfaced with whole-house systems. They offer burglar and fire alarm interface, [illegible] from the car, and even computer modem connection, [illegible] the lighting system from afar. Whole-house systems [illegible] control everything electrical, including fans, garbage [illegible] easy to hook up detection devices, such as [illegible] switches, to control specific lights. For instance, [illegible] illuminate the lights in a closet or a motion sensor to [illegible] basement stair. Laying out a whole house system can be tricky. Portable lights present the biggest challenge, as it' s necessary to choose specific receptacles for them. (I generally recommend using a non-standard receptacle that requires you to install a matching plug on the lamp being plugged in—lest a vacuum cleaner be plugged in and burn out the vacuum, dimmer, or both!) Should you choose one of these systems, prepare for it to be expensive and complicated to get up and running. System reliability was a problem a decade ago, but it' s not a primary concern any more. Most manufacturers have backup capability via modem from the factory to help restart a system after a problem. Bypass methods allow the lighting to operate, albeit without control, while troubleshooting problematic dimmers and computer devices. And once the technical aspects are working smoothly, if the functions of a whole house system are too complex for the client, change them!

COMPARATIVE COST OF CONTROL SYSTEMS

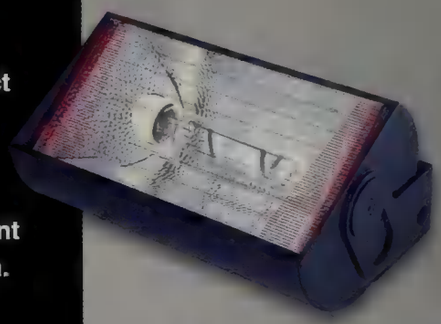
TYPE OF SYSTEM	COST/ SQ FT
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MINIMUM CODE SWITCHING WITH BETTER QUALITY DIMMERS AND DECORATOR SWITCHING	$0.35 — $0.50
MINIMUM CODE SWITCHING WITH FOUR-SCENE PRESET DIMMER IN LIVING ROOM, PREMIUM DIMMERS AND SWITCHES THROUGHOUT	$0.75 — $1.00
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Cost and complexity

In assessing needs and opportunities for any residential lighting project, it is probably best to first find out your client's awareness of the many options and the potential cost implications. There is no sense in designing a control system that isn't affordable. As a basic rule of planning residential systems, make a point of showing the parts and pieces to the client. Most manufacturers' agents can provide literature and sometimes a working demonstration for the client. It's really important to determine that all of the adults in the household like the control system being selected, and want it in their home. Children and guests must at least be able to use the system. If it's too complex, it will end up like the veritable VCR: never programmed to do all those wonderful things it was chosen to do. ■


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RESIDENTIAL LIGHTING

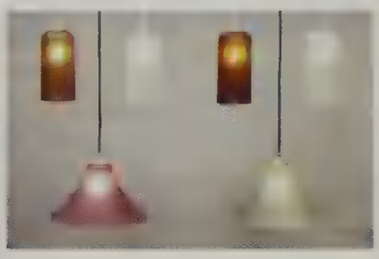
► Pastel pendants

Suggested for retail and restaurant as well as residential, Verra cable-hung lights come in these five shapes. Options include clear and four colors of sandblasted-glass shades, and compact-fluorescent, 55W halogen, or medium-base incandescent lamping. 914/698-5959. D'Ac Lighting, Mamaroneck, N.Y. **CIRCLE 250**



▼ Sandblasted acrylic

Based on a custom fixture designed by Robert Gonzalez for Nine West shoe stores, Sea Glass lights come as the pendants below, and also in table, sconce, and floor-light models. Color range as shown; list price: $190-$220. R.A.G.E., Brooklyn, N.Y. **CIRCLE 255**



▼ Aysmettric chandelier

Bright integrally colored Murano glass shades in yellow, amber, green, red, cobalt, and white highlight new Actus luminaires. Below: the Actus 6-branch chandelier, a bit over 27 inches overall. Also available, in customer's choice of shade colors, are UL-labeled night-table and reading lamps; ceiling fixtures; sconces; and a floor light. Lamping: 60W frosted E14s. 718/436-2002. Itre, U.S.A., Inc., Brooklyn, N.Y. **CIRCLE 251**



▲ Murano tour de force

A wonderful luminaire for the right spot and the right budget, Artemide's Pantalica chandelier has loops, curves, and globes of handblown Murano glass that cast a flattering glow from frosted 60W bulbs. Made by VeArt as part of the Venexiana line, suspended light can be hung from 32- to 55-in. from the ceiling by adjusting the chrome-plated, telescoping stem at installation. Glass elements may be ordered in red and white, as well as the blue shown above; all exposed metal parts are chrome plated. Two- and three-light sconces are available in Pantalica styling. Complete dimensions and lamping data given in Artemide's 1997-98 Master catalog. 800/359-7040. Artemide, Inc., Farmingdale, N.Y. **CIRCLE 253**

▼ Deco influence

Classic Collection sconces have the gentle curves and low-relief fluting of the Art Deco luminaires that inspired them. ADA-compliant, lights come in nickel and brass finishes. Baldinger Architectural Lighting, New York City. **CIRCLE 256**





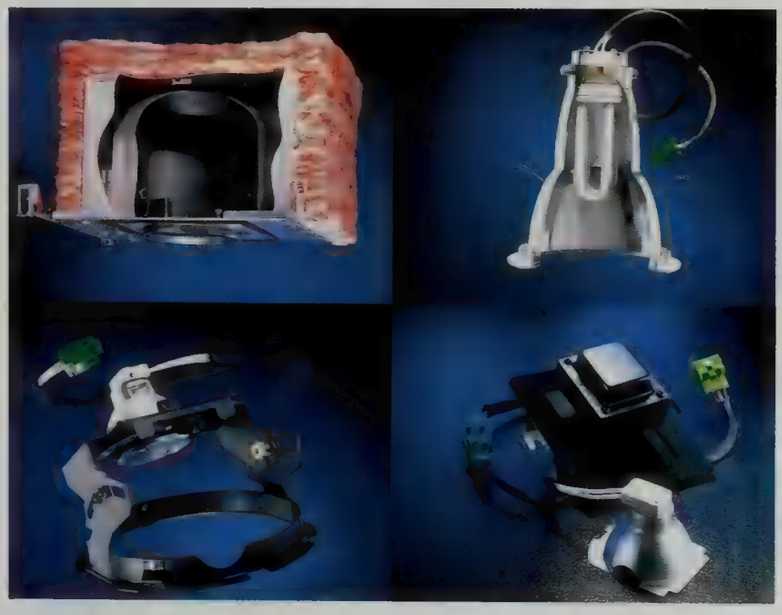
▼ Fluorescent pendant

The RLM pendant has a spun-aluminum shade, suspended by a cable (as pictured) or stem mounted. Suitable for dining or meeting tables, fixtures take triple-tube, 2-D, or other CFLs. Advent Lighting, Greenville, Wis. **CIRCLE 252**



► "Spec grade" for the home

New Iris recessed lighting is said to bring the lamping versatility and high-performance optics of commercial fixtures to a product line appropriate for the residential client. Fixtures meet insulated-ceiling and energy codes, and offer enough punch for today's high-ceiling spaces. The IC platform (top left) is finished an unobtrusive matte black; reflectors (top right) match the cutoff requirements of different sources. Accent luminaires are fully adjustable for precise aiming, while holding their center-aperture position. Quick-connect plugs (lower right) make relamping easy; lv transformers are acou stically isolated to eliminate hum. Cooper Lighting, Elk Grove Village, Ill. **CIRCLE 254**



BATH LIGHTING



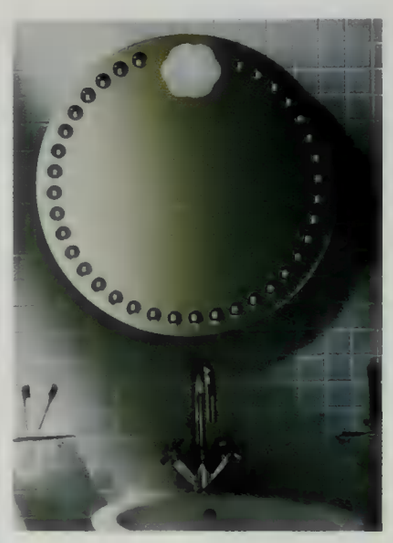
▲ Point-source illumination
Because of its minimal (3-in.) clearance requirements and moisture resistance, remotely illuminated fiber-optics are a natural for bathroom lighting. Axiom Design used FiberSpots in an Orinda, Calif., showcase home to illuminate an opulent marble bath from a perimeter soffit. They also created a twinkling-star effect by putting fiber-optic strands behind a faux-sky painted dome ceiling. 800/FBR-STRS. Fiberstars, Inc., Fremont, Calif. **CIRCLE 257**



▲ Linear mirror lighting
The Baton vanity fixture encloses an energy-efficient, warm-colored T8 lamp within an extruded-glass cylinder, and provides for easy relamping with a "break-away" end cap and socket. Said to illuminate evenly without glare, the T8 Baton comes in 28-, 40-, and 52-in. overall lengths. 415/431-4300. Boyd Lighting Co., San Francisco. **CIRCLE 258**

▼ From Italy in color
A source of authentic, hand-blown Murano glass, Vetreria de Majo makes fixtures and accessories with interesting shapes in soft shades of yellow, green, red, orange, blue, white, and gray. Pictured below: Memory sconce in a light blue glass. UL listed fixture takes incandescent, screw-in CLF, or halogen lamps. Also available: two-lamp task light and floor light, and a pendant version. 908/745-9710. Illuminating Experiences, Highland Park, N.J. **CIRCLE 259**



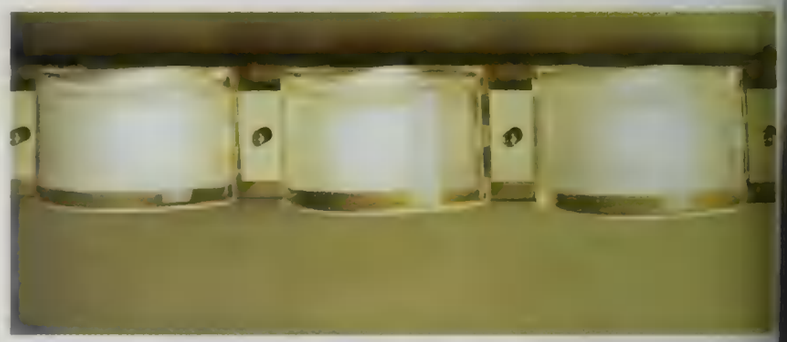




▲ Paired mirrors and lighting
FlosUSA Bagno is a new, coordinated collection of lighting and glass mirrors, both designed for Flos by Matteo Thun. Components are available separately, as mirror or as light fixture, or pre-mounted on the glass, ready for installation. A quick-disconnect plug and 12-volt transformer are furnished for remote installation as required; lights are UL-listed. Mirrors come in dozens of round, square, and rectangular sizes; luminaires can also be fixed on existing glass.

Two possible assemblies of different mirror and light designs are pictured above. At left, the Lucrezia flower wall light is mounted at the top of a 31 1/2-in. diameter mirror surrounded by integral mirrored dots. Luminaire of blown, etched Pyrex glass takes a 35W 12v lamp. Venezia (right) projects about 4 in. off glass or wall; the switch version shown operates by a pull rod in the base. Finish options: white or chrome; white Pyrex shade. 516/549-2745. Flos USA, Huntington Station, N.Y. **CIRCLE 261**

► Sequential incandescents
A mirror light with sparkle, the Mini-Bracelet fixture is available in lengths of up to eight light "sequences" and four decorative, etched-glass shades. The close spacing of the KX2000 candelabra lamps on a shallow brass (or chrome) backplate is said to produce a comfortable, luminous effect. 800/217-7722. Lightolier, Fall River, Mass. **CIRCLE 260**







◄ Halogen lighting for the bath
Robern's Wall Mirror Halogen pendant (far left) works with both traditional and contemporary interior styles. Fully dimmable, light takes 12v halogen bulbs up to 50W; arms may be chrome, as shown, or brass; shade is frosted glass. Sconces (right) are 9-in.-high frosted-glass tubes set on a 3 1/2-in.-wide mirrored backplate either 30- or almost 40-in. high; unit can be mounted between cabinets, as shown, or on the wall to either side of a mirror. Fixture takes 120v halogens up to 150W. 215/245-6550. Robern, Inc., Bensalem, Pa. **CIRCLE 262**

Music to your eyes

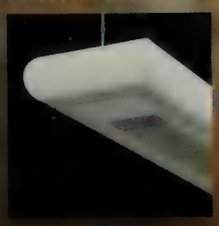
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Meets RP-1

Indirect





1 T5 - 2610 lumens
100% up
87.4% efficiency
Peak candela @ 127.5°
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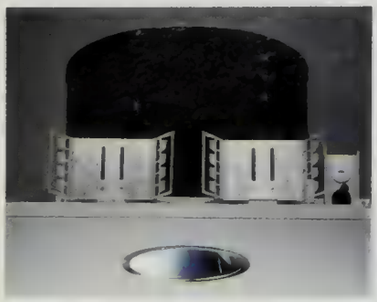
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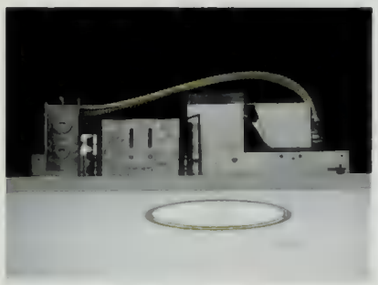
CIRCLE 54 ON INQUIRY CARD

CONTRACT LIGHTING

▼ Downlighting "family"

Staff's new Specification Downlighting Series links five light sources—compact fluorescent (including 32W triple-tubes), HID, low-voltage, A-lamps, and incandescent PAR lamps—within a uniform,

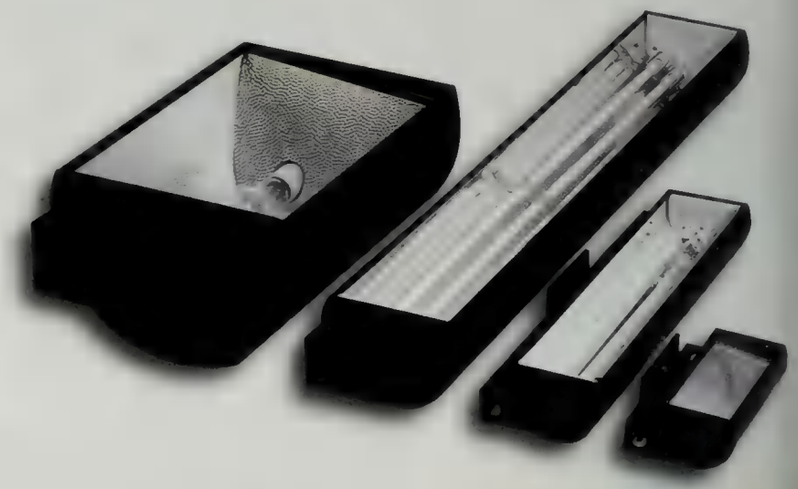




4-, 6-, 7-, or 8-in. aperture dimension. A cohesive re-orientation of all Staff high-performance, architectural-grade products, the Series offers a standardized housing and reflector appearance whatever the lamping. Also new across-the-line: a minimal-width flange detail that presents a very flat, unobtrusive profile on the ceiling. Products are supported by reformatted, tabbed specification binders; many offer 72-hour delivery. 800/932-0633. Zumtobel Staff Lighting, Inc., Highland, N.Y. **CIRCLE 263**

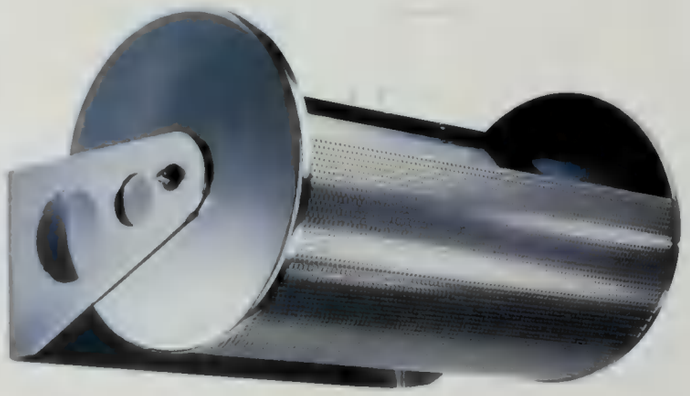
► Interior and exterior

The Echo Series of linear-fluorescent, metal-halide, and halogen lighting for interior and exterior applications is now made with a stronger and more corrosion-resistant extruded-aluminum housing, suitable for wet locations. Versatile ballasting and mounting options permit a continuity of design throughout a space, within a range of four sizes of solid-metal or perforated-steel housings and the new aluminum fixtures in three standard sizes. 414/242-1420. SPI Lighting, Inc., Mequon, Wisc. **CIRCLE 264**



▼ Asymmetric luminaires

Available in two sizes—one for "any grand space" and a smaller model suitable for lower-wattage wallwash and uplight applications—new Dotted Line fixtures are set off by a perforated-aluminum cylinder shielding the asymmetric optics. The round end plates maintain a consistent profile regardless of the aiming angle of the individual luminaire. Finish options include a white semi-gloss and bright-anodized aluminum (shown below). Both styles can be ceiling or wall mounted; the larger fixture, style 137, takes 300W to 1000W halogen and 175W to 1000W metal-halide sources. 203/931-4455. Elliptipar, West Haven, Conn. **CIRCLE 265**





▲ Light and look

Paravision combines MR16 halogens and a continuous-use miniaturized video camera within a sleek straight or arced aluminum light tube. Designed for casinos, retail sales desks, and other applications involving cash sales, the fixture illuminates transaction areas while attempting to minimize the chance of employee or customer theft or cheating. 714/957-6101. Tivoli Industries, Santa Ana, Calif. **CIRCLE 268**

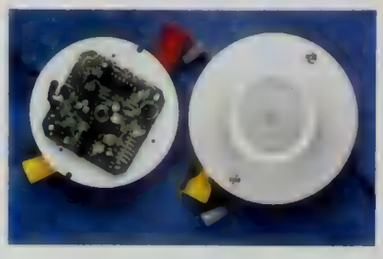


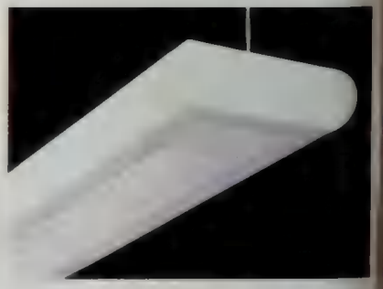
◄ Small-scale indirect

Part of a line of luminaires that seem to get thinner and thinner, the Arcos Perf is down to 2 3/8-in. thick by 9 9/16-in. wide. Ballasting options, including emergency and the miniature Energy Savings unit, permit a number of 2- and 3-T8 lamp configurations as well as 2-lamp compact fluorescents. The perforations (done before the housing is painted) spill light to equalize brightness between ceiling and fixture. Arcos Perf comes in 8-ft lengths that can be connected in rows, or suspended individually; the slim luminaire can be specified in any of 16 standard colors. 617/294-0100. Lightcontrol, Hanson, Mass. **CIRCLE 266**

▼ Dual-mode occupancy sensor

Model CMR-PDT solves a common sensor problem: how to know if lights are needed in a restroom where stall partitions can block coverage. For line-voltage installation, the unit uses both infrared technology and microphonics, and can "hear" and "see." 203/265-2842. Sensor Switch, Wallingford, Conn. **CIRCLE 267**





▲ Super-thin VDT luminaire

The smallest Ergoline linear yet, Minuet takes the new 5/8 in.-diameter T5 lamp. Suitable for low ceiling spaces, the fixture comes in all-indirect, semi-indirect (above), and semi-specular louver versions. Extruded housing permits 12-ft on-center mounting. 800/665-LEDA. Ledalite, Langley, B.C. **CIRCLE 269** ■

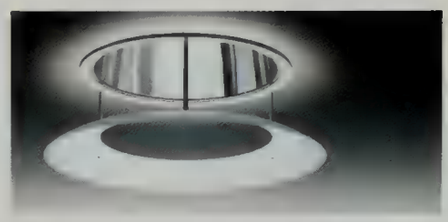
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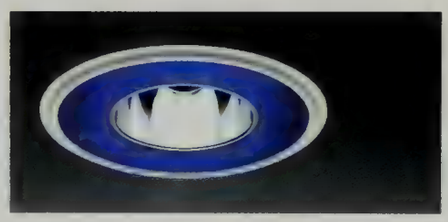
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PRODUCT LITERATURE

Light without energy

A technical brochure summarizes data that demonstrate how higher light-reflectance ceilings can increase work-plane illuminance or reduce initial-fixture and continuing-maintenance costs, regardless of the type of lighting systems installed. When indirect-lighting systems are considered, Hi-LR ceilings can significantly reduce these costs. A chart compares the light reflectance, acoustical performance, and durability of various Armstrong ceilings. 800/448-1405 (opt. 4). Armstrong World Industries, Lancaster, Pa. **CIRCLE 270**

Italian lighting design

A new 68-page catalog of "affordable high-design objects" commemorates LucePlan USA's inauguration as the American marketing arm of the Milan-based manufacturer, and the resulting reduction in trade prices for many luminaires. Includes lamping, dimension, and finish-option data for each fixture. 212/989-6265. Luceplan USA, Inc., New York City. **CIRCLE 271**

Residential lighting guide

Useful for both design professionals and homeowners, a new 30-page workbook takes readers through what to light, how to light it, and what to light it with. Using diagrams, drawings, and floorplans, the guide shows typical rooms and suggests ways to analyze lighting problems, demonstrating the effective use of light to create mood, atmosphere, and function in a space. 800/223-0726. Lightolier, Inc., Fall River, Mass. **CIRCLE 272**

Emergency lighting

The NEMA Guide to Emergency Lighting is available to help architects, property managers, and others understand the features of available life-safety products and their energy requirements. The booklet explains key points of emergency egress lighting standards and outlines techniques for meeting code requirements. Single-copy cost: $11. 703/841-3200. National Electrical Manufacturers Association, Rosslyn, Va. **CIRCLE 273**

Cast-aluminum standards

A four-page brochure highlights the custom-design flexibility offered by this maker of traditional style, cast-aluminum poles and luminaires that meet most outdoor roadway, path, or area illumination needs. 610/948-4000. Western Lighting Standards, Div. Spring City, Spring City, Pa. **CIRCLE 274**

Online lighting information

A Netcom disk helps architects and lighting designers access Osram Sylvania's Web site, a source of information on lighting products and performance solutions to industry-wide lighting applications. http:// www.sylvania.com. Osram Sylvania, Inc., Danvers, Mass. **CIRCLE 275**

Continued on page 183



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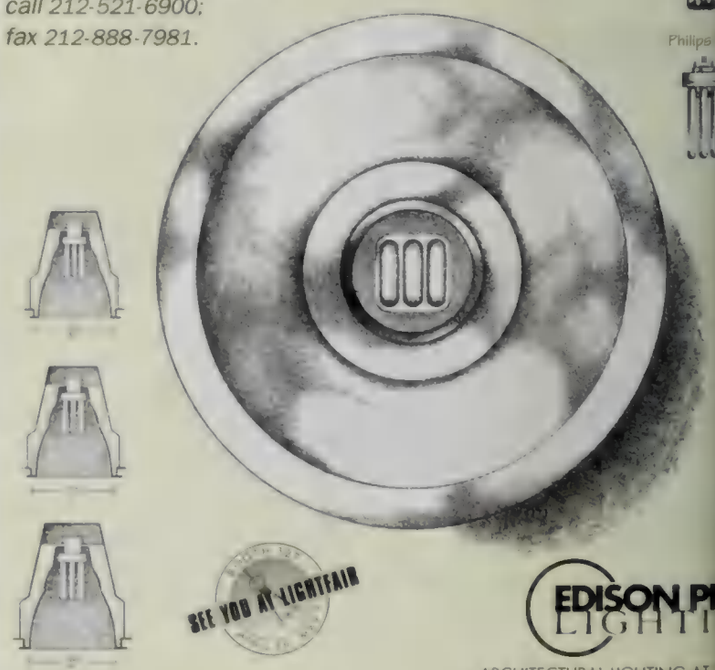
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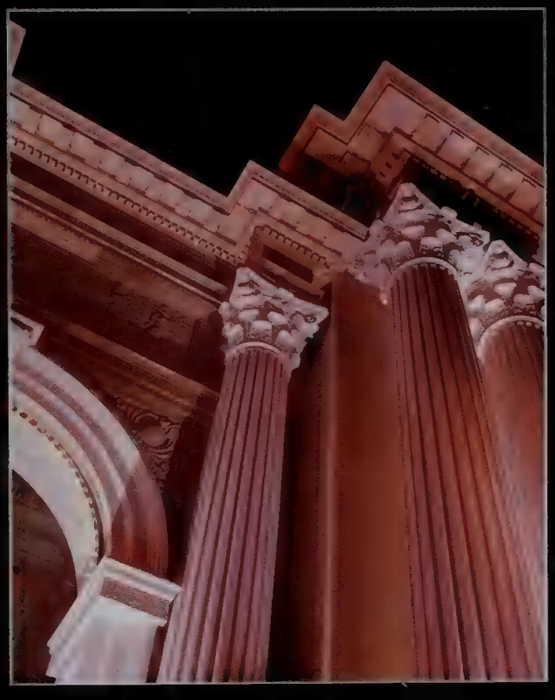
CIRCLE 56 ON INQUIRY CARD

The Hydrel 9000 Series established a new benchmark for in-grade lighting in the early nineties.



Today's 9000 Series is still the

BENCHMARK



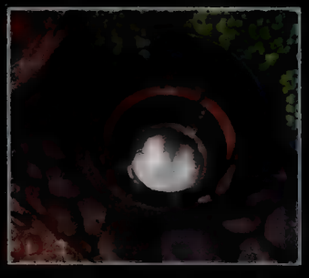
These innovative fixtures introduced new levels of lighting performance; sealed modular construction to eliminate moisture intrusion and resulting corrosion; and greatly simplified installation and maintenance.

Today's 9000 line has expanded to handle new lamps and a variety of modifications to accommodate designer's needs.

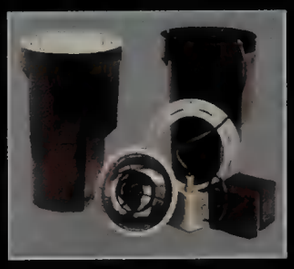
Specify the proven value in In-grade Lighting The Hydrel 9000 Series.



AimSet™ on the 9300 Series allows beam angle preset.



Well Light with clear Lexan™ cover, 9300 Series.



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The Lighting Pattern Book for Homes
by Russell P. Leslie and Kathryn M. Conway. Published by the Lighting Research Center and McGraw-Hill, 1996, 222 pages, $60.00

The Outdoor Lighting Pattern Book
by Russell P. Leslie and Paula A. Rodgers. Published by the Lighting Research Center and McGraw-Hill, 1996, 218 pages, $60.00

Reviews by Nayana Currimbhoy

The first two titles in a series planned for publication by the Lighting Research Center at Rensselaer Polytechnic Institute and McGraw Hill, *The Outdoor Lighting Pattern Book* and *The Lighting Pattern Book for Homes* are both practical, informative guides aimed at architects, designers, contractors, and lay persons.

The Outdoor Lighting Pattern Book provides guidelines for lighting a variety of public places, ranging from parks and shopping malls to city centers. Each "pattern" begins with a page that includes basic information about a site. The typical design represents lighting as it is found in many of our cities and towns. "Upgrades" suggest ways of improving situations using existing hardware and installations, while "redesigns" give a completely new scheme. Each of the patterns in the book is accompanied by illustrations of a generic site and fixture layout, and by an evaluation of illuminance, connected load, costs, and maintenance.

Formatted in a similar, efficient style, *The Lighting Pattern Book for Homes* covers a somewhat broader base. Divided into sections such as techniques, designs, luminaires, lamps, and controls, the book packs in a thorough grounding of indoor lighting. As in *The Outdoor Lighting Pattern Book*, the design section takes different rooms of an apartment or house and then goes on to illustrate typical lighting, upgrades, and renovations, along with annual operating costs. Although one might question individual points such as the consistent use of fluorescent strips as wall washes in small bedrooms, bathrooms, and studies, chapters are clear and simple, employing illustrations in plan and section in order show how lighting effects are achieved.

Both books offer straightforward, matter-of-fact advice on lighting. The solutions are practical, energy efficient, and affordable. There is no mystification, no glorification of the process of design, no stars, no creative bursts. These are workhorse books where you look, not for inspiration, but for information.

Applied Illumination Engineering, Second Edition *by Jack L. Lindsey, FIES. The Fairmont Press, 1996, 516 pages, $73*

The 1990s witnessed many changes that have affected lighting design, most significantly, the National Energy Policy act of 1992, which banned the use of many popular lamps, encouraged the introduction of new lamps and fixtures, and increased the use of the electronic ballast. Adapted to address the implications of these changes, the second edition of Applied Illumination Engineering is an in-depth, information-packed text that discusses different light sources, their use and measurement, quality and quantity of illuminance, as well as maintenance and control techniques. This book deals with the mechanics of lighting, and is a useful for serious practitioners and students as a learning tool and reference. However, the book is not for the mathematically shy. ■

PRODUCT LITERATURE

Large-diameter fiber optics

Color catalogs describe the fiber-optic technology behind Lumenyte Fiber Optics, which uses monofilament fiber to "bridge the gap" between neon-like lighting and incandescent. Lumenyte manufactures all equipment used in its systems, including optics, illuminators, lenses, and fittings; large-scale applications (such as architectural cove lighting) are a specialty. 714/556-6655. Lumenyte International Corp., Costa Mesa, Calif. **CIRCLE 276**

Accessible lighting controls

A 20-page catalog, *Enlightened Alternatives for Lighting* illustrates Universal Design Series products for residential, commercial, and institutional environments. Includes remote-control and sensor-operated devices, as well as illuminated, easy-to-use rocker-style Decora switches. Of note: a three-function security switch with a special Flash function, which causes front-door and exterior lights to flash on and off at one-second intervals, alerting neighbors and summoning emergency assistance. 800/323-8920. Leviton Mfg. Co., Inc. Little Neck, N.Y. **CIRCLE 277**

Ballasts and energy regs

A guide shows how ballasts can help meet the National Energy Policy Act of 1992 (EPACT). Text compares the costs and savings involved with three different relighting strategies. 708/390-5000. Advance Transformer Co., Div. Philips, Rosemont, Ill. **CIRCLE 278**

FLW luminaires

A collaboration between Japanese manufacturer Yamagiwa and the stained-glass techniques of Wisconsin-based Oakbrook-Esser Studios is responsible for a marvelous collection of Frank Lloyd Wright lighting, including art-glass Sumac-pattern pendants and sconces done for the Dana house. A catalog gives dimensions, lamping, and finish details, and illustrates fixtures in original settings. Fax requests: 818/879-8640. Yamagiwa USA, Westlake Village, Calif. **CIRCLE 279**

Modular recessed lighting

An installation guide shows how high-performance German-made downlights permit site adjustments and the addition of decorative trims without compromising optical performance. 305/652-1600. WILA Lighting, Inc., Miami. **CIRCLE 280**

Liturgical luminaires

A 46-page catalog illustrates energy-efficient pendants and sconces for religious settings, in styles from Gothic to Contemporary. All metal-finish options shown. 314/773-1340. McFadden Lighting Co., St. Louis. **CIRCLE 281** ■



For more information, circle item numbers on Reader Service Card



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CIRCLE 60 ON INQUIRY CARD

Everybody...







It's true for owls, murrelets and salmon and it's true for people, too. The Pacific Lumber Company is working hard to strike a balance that will let us preserve old growth redwoods, protect wildlife and still produce the building materials our nation needs.

Ninety-five percent of the old growth redwoods are already preserved in more than 88,000 acres of parks. In addition, there are more than 350,000 acres of redwoods in parks and other reserved public property. Over the years, The Pacific Lumber Company has provided over 20,000 acres of easily accessible old growth forest, which are now part of Humboldt Redwoods State Park, Founders Grove, Avenue of the Giants and other popular parks.

On September 28, 1996, our Company reached an agreement with the State of California and the federal government to save the old growth redwoods known as the Headwaters Forest.

This agreement is a "win-win" for all parties involved. It adds 3,000 acres of old growth forests and a 4,500-acre buffer zone to the hundreds of thousands of acres of redwoods already preserved in parks and public lands. It leaves our Company with the ability to grow and harvest redwood on a sustained-yield basis.

This agreement will also protect wildlife. Its provisions state that PALCO establishes a Habitat Conservation Plan to assure that the wildlife on our remaining property will have sufficient food and cover. We also are required to submit a Sustained Yield Plan that monitors the growth and harvest rate of our forest in 10-year increments over a 120-year period.

If you are interested in the details of the Headwaters agreement and our efforts to save this forest, visit our internet site at www.palco.com. If you have any questions, write to us; we would like to answer them.

needs a home.

PALCO

The Pacific Lumber Company

P.O. Box 565
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Telephone: (707) 764-8888
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CIRCLE 61 ON INQUIRY CARD

WOOD WORKS

Responsible Choices

It used to be, you never thought twice about how your building material choices affect the environment. You selected materials based primarily on economics, performance and quality. But now, in light of a growing population, limited energy supplies and concern for the air, water and land that surrounds us, we have been forced to consider something else. Sustainability.

With this come important new questions like, how is this particular building material made? How much of it do we have? How will it tax our environment? If we consider the answers, we can make wise choices and begin to own responsibility for the environmental impact of our decisions. We can begin to see how choices to specify wood or steel framing systems, vinyl or wood windows, concrete slab or wood-frame floor systems, affect the whole earth, not just our corner of it.



For low-rise structures, up to five stories, wood works as a quality building material that is energy conservative, recyclable and biodegradable, and sustainable in perpetuity.

Energy Conservation

In choosing building materials from an environmental perspective, we need to consider environmental impacts throughout product life cycles. One of the most important factors is energy consumption, including the energy it takes to extract, manufacture, deliver, use and dispose of the product, as well as the effect product selection has on the energy efficiency of the building. While it's true that producing any building material requires energy, some make bigger demands than others. Considering the alternatives (steel, aluminum, plastic and concrete), wood uses less energy and puts less strain on declining energy resources.

The bulk of wood's structural properties come naturally, while the tree is growing. That makes the manufacturing process a relatively simple one of reshaping the material for more efficient use. Compared to other building products little energy goes into breaking down the raw material so that it can be recomposed into a usable product.

Another advantage of wood is that residuals from the manufacturing process are used to offset a portion of the energy consumed. At some facilities this electrical co-generation process can recoup 100% or more of the energy required to run the plant. No other material can make this claim.

The choice of building materials also significantly affects energy requirements for heating and cooling. Wood framing is a much better thermal insulator than steel. Steel framing members are highly conductive and act as thermal bridges, carrying heat around or through cavity insulation. According to *Environmental Building News*, a steel framed wall with R-13 fiberglass batts has an overall R-value of only R-6 or R-7. The same wall framed in wood achieves an R-10 performance rating (Table 2).

Pollution and Solid Waste

Choosing building products that cause less overall pollution and waste is one way we can all contribute to a safer environment. However, no building product can claim a totally clean record when it comes to air and water emissions.

Yet, wood does what the others cannot. It grows. And as it grows, wood works to freshen the air by taking in carbon dioxide and releasing oxygen. In this process, carbon is "fixed" into the wood fiber, where it remains even after the tree is processed into a usable product. According to the American Forest & Paper Association, for every pound of wood produced in managed forests, 1.47 pounds of

WOOD WORKS



Wood building materials offer architects design flexibility combined with warmth and environmental integrity.

carbon dioxide is consumed. In the process, oxygen is released into the atmosphere, helping to offset the greenhouse effect and other pollution-related problems. When those trees are harvested, new trees are planted, continuing the cycle.

With wood, very little is wasted. Branches, needles and other parts that can't be made into products are left in the forest to naturally biodegrade, enriching the soil. The log is used to make lumber, plywood, and other primary wood products. Residuals from the manufacturing processes, including sawdust and scraps, are used for products such as particleboard, medium density fiberboard and hardboard. Whatever cannot economically be used for a product becomes hog fuel to generate power which, in turn, helps offset the energy needed to run the manufacturing plants.

Changes in society's expectations, coupled with changing economics, have made the recycling of metals, plastics and paper a way of life in North America. A similar transition is beginning for waste wood products. In several areas, waste wood is recovered and used to manufacture particleboard, medium density fiberboard and other wood-based composite panels. This trend will accelerate as the value of discarded wood fiber increases.

Renewable or Nonrenewable

We cannot use what we do not have. We cannot replace oil or gas or coal, bauxite or iron ore—all nonrenewable natural ingredients that go into making building materials. But we can replace trees. As a matter of fact, trees are the only renewable source for any of the primary building materials used today. Every year in the U.S. and Canada, we grow more trees than we harvest. According to the U.S. Forest Service, an average of six million trees are planted every day in North America. Thanks to these efforts, the total wood volume in the U.S. and Canada has actually increased some 25% since the 1950s. In the U.S., net growth in our forests exceeds harvest by more than 30% every year. Better still, America's standing,

Wood and Steel Framing: A Comparison

The following charts compare the environmental costs associated with the extraction, manufacturing and construction phases of two 10-foot by 100-foot walls. One wall is constructed of wood, and the other from steel.

Material Usage

As indicated, the wood wall used 25% less raw material by weight than the steel alternative (Table 1).

Energy Use

The steel wall required three times as much energy as its wood counterpart to extract, manufacture, transport and construct (Figure 1). Half the energy used in the manufacture of the wood assembly is derived from wood fiber waste, reducing demand on the world's fossil fuel reserves.

CO2 Emissions

Carbon dioxide emissions are three times higher in producing the steel wall than for the com-



TABLE 1 - COMPARATIVE RESOURCE REQUIREMENTS (KG)

RAW MATERIAL REQUIRED	WOOD WALL	STEEL WALL
Roundwood	597	
Limestone	2	77
Iron Ore	12	509
Coal	6	252
Zinc		2
TOTAL	617	840

parable wood assembly (Figure 2). The high energy requirements for steel manufacturing accounted for a large portion of the carbon dioxide emission difference. Air pollution emissions - such as sulfur dioxide, nitrous oxides, methane, particulate and volatile organic compounds - were also significantly higher for the steel wall assembly.

Energy Requirements for Heating and Cooling

Wood framing performs well thermally relative to steel framing. For example, a steel framed wall with R-13 fiberglass batts has an overall R-value of only R-6 or R-7. The same wall framed in wood achieves an R-10 performance rating. Steel framing is only 50% to 60% as thermally efficient as wood framing over similar stud spacings and wall thicknesses (Table 2).

TABLE 2 - IMPACT OF FRAMING ON WALL R-VALUES

FRAMING MEMBER AND SPACING	NOMINAL CAVITY INSULATION	COMBINED CAVITY & FRAMING R-VALUE (W/O SHEATHING OR AIR DAMS) WOOD-FRAMED	STEEL-FRAMED
2x4 16" o.c.[1]	R-11	R-9.0	R-5.5
	R-13	R-10.1	R-6.0
	R-15	R-11.2	R-6.4
2x4 24" o.c.[2]	R-11	R-9.4	R-6.6
	R-13	R-10.7	R-7.2
	R-15	R-11.9	R-7.8
2x6 16" o.c.	R-19	R-15.1	R-7.1
	R-21	R-16.2	R-7.4
2x6 24" o.c.	R-19	R-16.0	R-8.6
	R-21	R-17.2	R-9.0
2x8 16" o.c.	R-25	R-20.1	R-7.8
2x8 24" o.c.	R-25	R-21.2	R-9.6

Applies to C-Channel metal studs of 16 gauge or thinner. 1. 16" on center spacing assumes 11.9% of wall area is framing. 2. 24" on center spacing assumes 8.9% of wall area is framing. Source: Values for steel from ASHRAE Standard 90.1, values for wood calculated using parallel path method. Source: Environmental Building News

FUGURE 1 - COMPARATIVE ENERGY USE

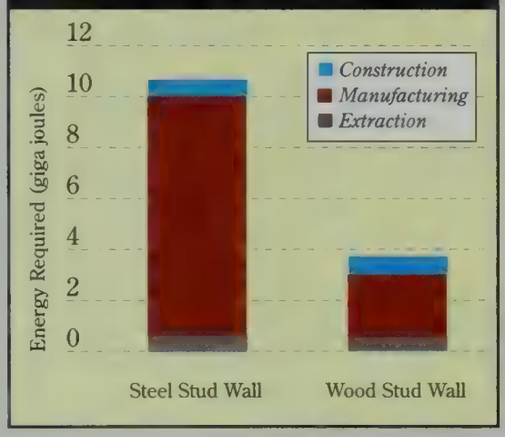
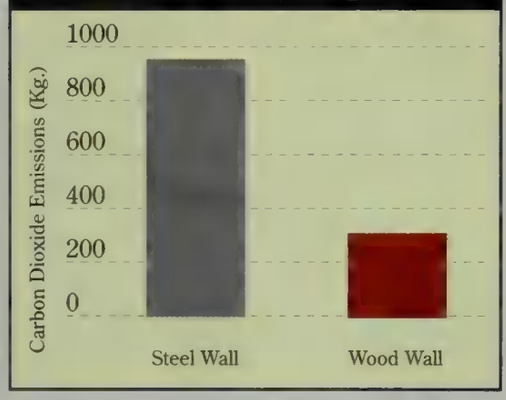
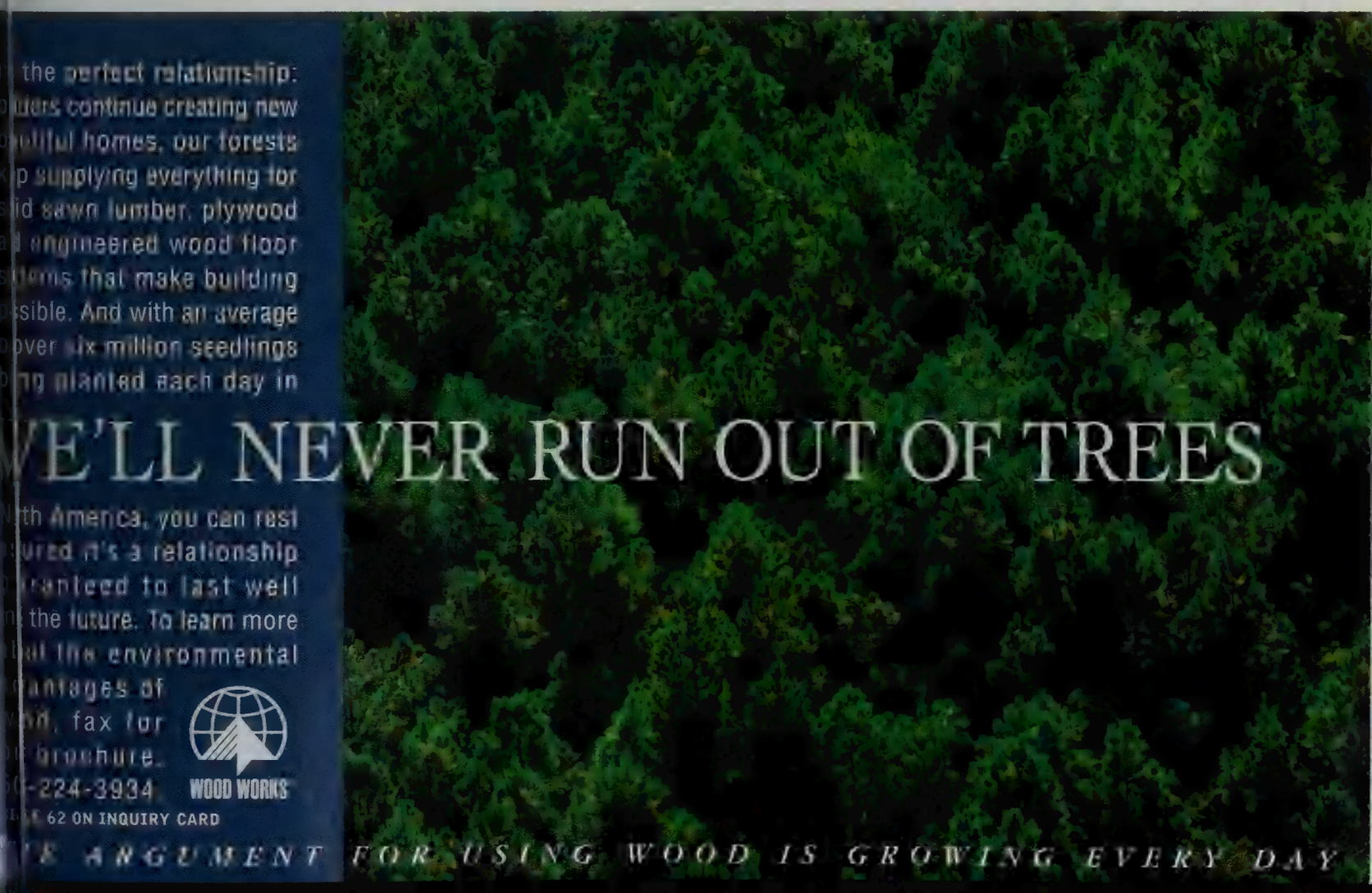


FIGURE 2 - COMPARATIVE CO_2 EMISSIONS



Source: The Canadian Research Alliance




What
you'll create,
what you'll build
it with, and how
you'll build it
is anyone's
guess.
We offer a complete line of
addition to quality lumber,
Recent purchases bring
our total timber holdings to
1.8 million acres of
timberland, helping us provide
uninterrupted supply.

An unpredictable new design made with wood will be appreciated for years.

But unpredictability from a supplier of building materials is anything but appreciated. That's why at Willamette Industries we've taken significant steps

Who will to ensure we'll be your supplier of choice, now and in the future. We've invested in major capital improvements,

supply the so you'll always be supplied with the highest quality, complete line of traditional and engineered wood

materials products. We've purchased 546,000 acres of additional timberlands, safeguarding against product

isn't. shortages. And by providing design tools, like our E-Z Calc® software, we're making sure you and your contractors work together easily. Granted, you may still question the shape of your future projects. But when it comes to the wood products they'll include, Willamette will have the answers.

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A HISTORY OF LOOKING AHEAD

ur new OSB plant is of the most technically dvanced in the i and our new plant doubles our



Our expanding distribution network continues to provide greater availability throughout the U.S. and Canada.



CIRCLE 63 ON INQUIRY CARD

merchantable timber volume is projected to be greater in 2040 than it is now — even with increasing uses for housing, furniture and similar needs. That makes wood the only building material increasing its reserves each year.

On the other hand nonrenewable resources cannot be replaced. Eventually we will deplete them— in 50 years or 250 years. In 200 years the forest products industry will have grown four new generations of trees from which to manufacture lumber, plywood and other building products.

But no product is completely environmentally neutral. To have wood products, trees are harvested. Forest ecosystems are affected. Natural systems are temporarily disrupted. However with forest land management these impacts can be minimal. In comparison to the conversion of other resources into other building materials, wood products have very little impact on the environment overall. And, working with environmental groups and government agencies, the North American wood products industry has imposed upon itself the toughest forest management regulations in the world.

It comes back again to choices. If we are to sustain this planet for coming generations, we must decrease our reliance on irreplaceable resources. This means we must measure our choices between one building product and another not only by cost, performance and quality, but also by whether the product is derived from a renewable resource. When it comes right down to it, in low-rise structures, up to five stories, wood works. Wood is a quality building material that is energy-conservative, recyclable and biodegradable, and sustainable in perpetuity.

As a product specifier, your decisions have great impact. Because these days when you select material, you and your clients aren't the only ones who live with it. We all do. Choosing wood is a choice for a sustainable future.

A Closer Look at Forestry

Fly into Portland, Oregon, on a clear day and you can look out the window at a line of majestic snow-capped mountain peaks, the Cascades. As you pass by Mount Hood, it may appear as though the extensive forest surrounding the mountain is being removed, piece by piece. To the untrained eye from 20,000 feet in the air, it might not be a pretty sight.

A closer, more educated look reveals a forested patchwork in varying stages of growth, evidence of a remarkable cycle of renewal. The process of growing, harvesting and replanting trees is, for the wood products industry, not just a means of securing raw material. It's their future. And they take it seriously.

Foresters see their jobs as part art, part science and a lot of learning from nature. "It's a matter of objectives," says Duane McDougall, Executive Vice President in charge of the Building Materials Group at Willamette Industries. "To do a good job managing forests, you need to decide what you want your end-result to be, how long you'll take to achieve it, then go about managing with that objective in mind."

For industrial landowners and many private woodlot owners, the objective is to grow timber for products in a manner compatible with sustaining other resources as well. Says McDougall, "We want to stay in business, so it makes sense that we manage our resources in a manner that ensures we'll have them available forever."

More than a million homes are built in the U.S. each year and each one uses some 14,000 board feet of lumber (not to mention plywood, oriented strand board, particleboard and other engineered wood products). Meeting such [illegible] forest products requires an ongoing commitment to reforestation. Trees used today [illegible] building materials take anywhere [illegible] years to grow; the trees planted this year will be used to build houses sometime around the middle of the next century.

Well over two billion trees are planted each year in the U.S. and Canada, an average of more than six million each day. But there's a lot more to reforestation than just planting trees. The process begins three or four years before a timber harvest is planned. That's when a forester collects seed for the new seedlings that will be planted after the harvest occurs.



Well over two billion trees are planted each year in the U.S. and Canada, an average of more than six million each day.

And it's not just a matter of growing the same species in areas where they grow best. Lovell Lack, manager of the IFA Forest Nursery in Canby, Oregon, explains, "Oregon's forests are biologically diverse with disparate growing regions providing ideal conditions for different tree species. Annual rainfall in forested areas varies from 200 inches to less than 12. The state is divided into nearly 100 different seed zones according to soil type, rainfall, elevation, and climate. Seeds from the best trees in each zone are collected and used to grow seedlings."

The seedlings grow in a nursery for one to three years before they're planted in the forest. At the nursery, a series of quality control checks measure caliper, root-to-shoot ratio, and other traits to help ensure survival. "The result," Lack says, "is the trees we grow today are genetically stronger, contain more wood, and grow straighter and taller than natural regeneration would allow." For the end user, that means a steady supply of consistent quality product.

Laws in Canada, Oregon and other Western states require harvested areas to be reforested within two growing seasons. But the forest industry doesn't wait that long if it can help it. "It does us no good to wait around," says Willamette's McDougall. "It's in our best interest to get trees in the ground and growing right after harvest, so we do everything we can to see that it happens." Typical of forest land owners, Willamette plants about 400 trees per acre on its Western lands and anywhere from 400 to 650 per acre in the Southeast. "And we're not satisfied with anything less than a 90% survival rate," McDougall says.

Nature dictates

Virtually all aspects of forest management, from harvest to regeneration, are heavily influenced by nature. Many species of trees require direct sunlight to grow. "The forests up and down the West Coast evolved through thousands of years of stand replacement events such as forest fires, landslides and volcanic eruptions," McDougall explains. "These events cleared large areas of forest which were subsequently reseeded from the surrounding trees or a few lone survivors, resulting in essentially even-aged stands, dominated by a single species.

"Our harvest methods and subsequent management try to mimic and accelerate that cycle while yielding a substantial supply of wood."

In 10 years, under good growing conditions, Douglas fir will grow as tall as 30 feet or more. Southern pine, a generally smaller tree to begin with, might reach 25 feet in a decade. At that point it's time to thin the forest (as many as 60% of the trees might be removed), providing room for the remaining trees to add girth and height. From there, the stand might be fertilized and thinned again 10 to 20 years later (or, as is often the case in the Southeast, it may be time to harvest and begin the cycle anew).

Plantation forests, not unlike the cotton plantations they replaced, dominate the Southeastern U.S. Systematic tree farming is common, with stands of trees grown, harvest-

ed, and replanted in ongoing cycles of 30-50 years. Harvest systems and other management techniques find their roots as much in convenience and economics as in the rules of nature. "Our foresters work the land in much the same way as any other farmer would," McDougall explains, "The biggest difference between a tree farmer and a soybean farmer is that with trees, it takes 40 years or so before the crop is ready for harvest."

In drier climates, such as the inland West, significantly fewer trees grow per acre. Here the forests are dominated in higher elevations by mixed conifer species and in low areas by open, park-like stands of Ponderosa pine. Left to nature, fires occur much more frequently and tend to be less catastrophic than in the thick forests of fir, hemlock and spruce found near the coast. Again, forest management mimics nature. Selective harvests are common and reforestation occurs largely through natural regeneration.

Seeing the forest and the trees

Regardless of where the forests happen to be, foresters recognize the need to protect other resources as well. "Clearly, our objective is to grow timber, but we can't do that in a vacuum" says McDougall. "We know our forest practices can affect other resources."

That's why forest land owners leave buffers along streams and invest in habitat



Forestry is part art, part science and a lot of learning from nature.

improvement projects for salmon and other fish. Forest management programs include measures to enhance wildlife habitat for game species such as deer and wild turkey, as well as non-game species such as small mammals and song birds. Additional steps are taken to protect sensitive species such as spotted owls and red cockaded woodpeckers. Even rare plants receive special protection.

"We're proud of the balance we've been able to achieve between providing timber for products and protecting the forest resources from which those products originate," McDougall says, "but we know we can get better at it, so we'll never stop learning."

Wood Products for Today's Applications

Lumber and plywood continue to be mainstays of wood frame construction. But as wood resources have shifted from old growth to managed forests, and as technology has improved, the array of product choices available to architects has grown. A few of the products available today to complement traditional wood building products are described below. Innovations such as these have helped the wood products industry achieve better than 95% utilization of every log processed.

Structural glued lumber

Structural glued lumber is accepted for use under all model building codes and is interchangeable with solid-sawn dimension lumber of the same size, grade and species. These products may be edge-glued, face-glued or end-jointed, wherein "fingers" are cut into the pieces before they are joined. Finger-jointing is the most common method. This product makes efficient use of available wood resources and can be manufactured to long lengths.

This technology is also prevalent in secondary wood product manufacturing. Many of the wood components used for windows, doors, cabinetry, mouldings, trim and siding products are actually finger-jointed, edge-glued and face-glued pieces. In some cases a veneer is applied to composite cores to give the appearance of solid wood, while further extending available resources.

Machine Stress-Rated lumber (MSR)

MSR lumber is dimension lumber that, in addition to visual grading, has been evaluated by mechanical stress-rating equipment to measure stiffness, modulus of elasticity (E) and, in some cases, its specific gravity. MSR lumber is accepted by regulatory agencies and all major building codes. Specifying MSR is simple because it generally is marketed by strength and stiffness values, Fb and E. Its most common use is in truss manufacturing.

Glued Laminated Timber (Glulam)

Glued laminated timber, or glulam, is an engineered stress-rated product created by face-bonding individual pieces of solid-sawn or finger-jointed lumber. The flexibility of individual laminations allows glulam members to be made straight or in a variety of curved shapes. They are used in many applications including concealed or exposed beams, headers and columns in residential and commercial projects, warehouse roof beams, church arches, girders and deck panels for timber bridges.



Have Lunch With Southern Pine

Lunchtime learning is the new rage at more and more architect and engineering offices, where the staff enjoys a free deli or brown bag repast while listening to a lively briefing on the innovative uses of Southern Pine lumber.

It's the closest thing to a free lunch that you'll find anywhere.

On the menu for the 45-minute briefing are new design values for dimension lumber, engineered wood systems, lumber seasoning and grading, pressure-treated wood, code conformance, timber supply and environmental stewardship, and case studies of residential and commercial construction using Southern Pine.

For dessert: a sprightly question and answer session.

Architects and engineers like the fact that the presentation is a technical, *how-to* session on a basic building material, rather than a promotional pitch.

If you'd like to have lunch with Southern Pine, just contact the Southern Pine Council.

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WOOD WORKS



Glulam is manufactured from kiln-dried lumber, minimizing shrinkage and warping and ensuring dimensional stability. The use of dry lumber also gives glulam superior design values and excellent fastener-holding capability. In floor applications, this translates into a firm subfloor with minimal nail popping or squeaks. Glulam makes efficient use of second growth timber resources, decreasing dependence on old growth timber.

Oriented Strand Board (OSB)

OSB is a structural panel consisting of wood strands bonded with adhesives. Like the veneer in plywood, these strands are layered and cross-oriented for maximum strength, stiffness and stability. OSB is widely used as construction sheathing, web material for wood I-joists, structural membranes of structural insulated panels (SIPs) and in a growing number of other residential and nonresidential applications. OSB can be manufactured from a variety of fast-maturing tree species, as well as species not valued for lumber production. The process utilizes 85-90% of the log. The remainder, a volume of bark, saw trim and saw dust, is typically converted into energy or pulp chips.

Laminated Veneer Lumber (LVL)

Primarily a structural material, LVL is produced by bonding thin wood veneers so that the grain of all veneers is parallel to the length of the member. Manufactured in sizes approximating those of solid lumber, some of the product's many uses are as headers and beams, hip and valley rafters, scaffold planking, and the flange material for prefabricated wood I-joists. Like many engineered wood products, LVL helps optimize wood fiber use while maximizing [illegible] recovery.

Strand Lumber (PSL)

[illegible] of long veneer strands laid in parallel and bonded together with an [illegible] to form the finished structural [illegible] timber used for load bearing columns and, like LVL and glulam, for beam and header applications where high bending strength is needed.

Prefabricated Wood I-joists

Also referred to as I-beams, wood I-joists are structural members of the glued engineered wood products family growing fastest in popularity. I-joists combine high bending strength and stiffness characteristics with a low weight. Because I-joists can be manufactured to virtually any length, they offer clear span capabilities which cannot be achieved with traditional framing materials. The flange material for I-joists is typically dimension lumber or LVL; the web material is OSB or plywood. I-joists are used in both residential and nonresidential floor and roof construction in much the same manner as solid sawn lumber, with the largest use being in residential floor construction.

Particleboard and Medium Density Fiberboard (MDF)

Particleboard panels are manufactured from wood particles combined with a synthetic resin or other suitable binder and bonded together under heat and pressure in a hot press. Particleboard provides a smooth, stable and strong substrate for veneers, laminates and coatings. It is used extensively in furniture, cabinetry, countertops, veneer panel core, floor underlayment, doors, shelving, signs, games and sporting goods.

MDF, a similar product made from highly refined wood fiber, offers extremely smooth surfaces and homogeneous edges, which allow for intricate and precise machining. In addition to furniture and cabinetry, MDF is used in millwork and case goods. Because of its unique properties, MDF can be precisely machined (edge shaping, profile molding and three-dimensional finishing operations) and is a superb substrate for painting and laminating, as well as applications such as moulding and millwork.

The basic raw materials for particleboard and MDF are residuals (such as planer shavings and plywood trim) from other wood product manufacturing and to a lesser extent, round wood. Recycled wood, including urban wood waste, supplements raw material supplies for some manufacturers.

Product Information:

Detailed product information is available from the following wood industry trade associations:

APA-The Engineered Wood Association:
206-565-6600
Composite Panel Association:
301-670-0604
National Wood Window and Door Association:
847-299-5200
Southern Forest Products Association:
504-443-4464
West Coast Lumber Inspection Bureau:
503-639-0651
Western Wood Products Association:
503-224-3930
Canadian Wood Council:
613-747-5544

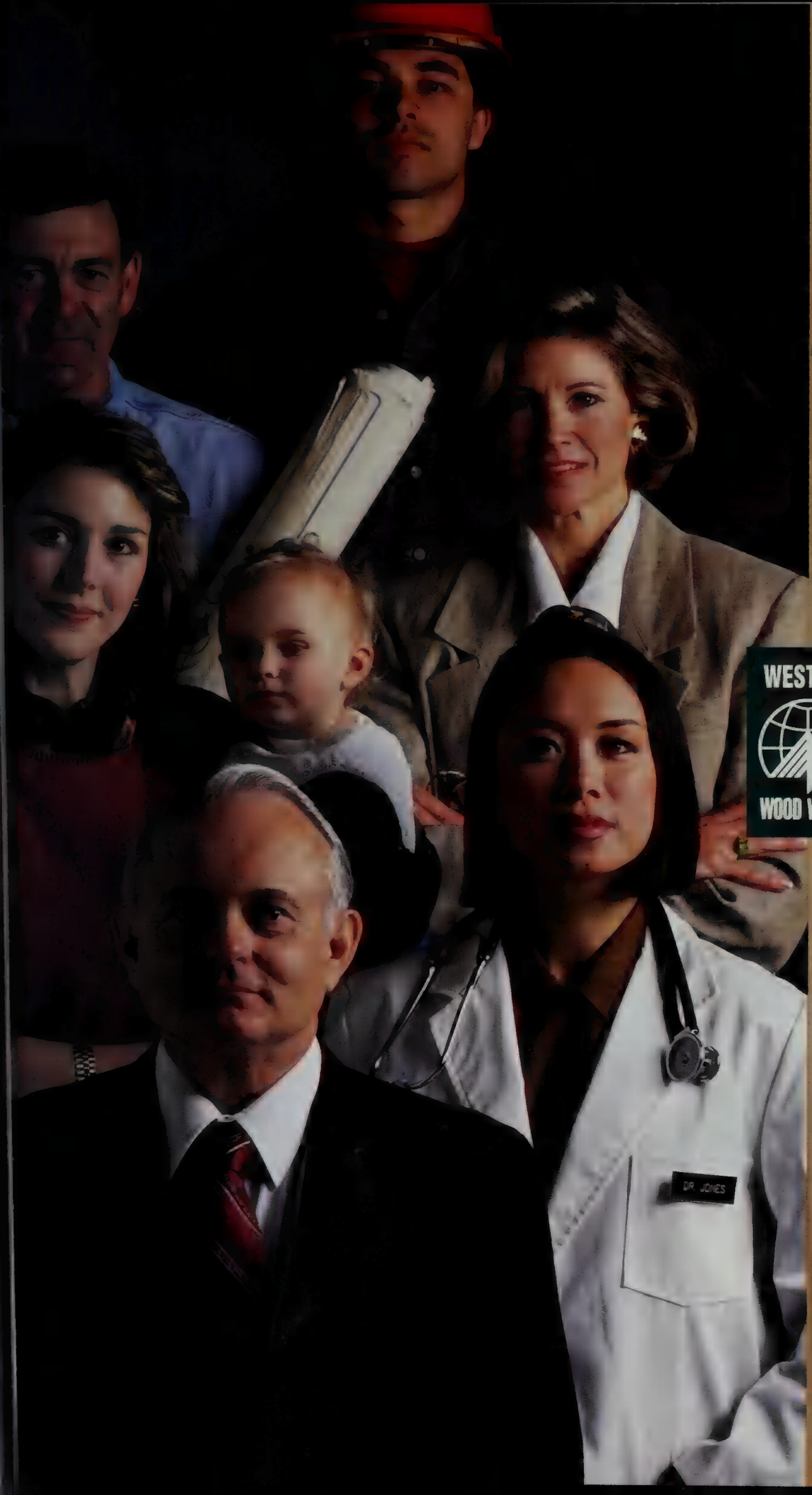
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WWPA member companies support the **Western Wood Works**™ program and are committed to providing quality lumber products while protecting and enhancing the forest environment.

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Idaho Forest Industries, Inc.
Layman Lumber Co., Inc.
Longview Fibre Co., Leavenworth Wood Products
Malheur Lumber Co.
Mescalero Forest Products
Ochoco Lumber Co.
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CIRCLE 70 ON INQUIRY CARD

NEW PRODUCTS

April features ceramic tile from both Italy (this page) and sources closer-to-home (overleaf). A very durable architectural material, tile is in the midst of a boom, as high-tech manufacturing processes create an impervious surface for almost any requirement. And, perhaps inspired by visions of Umbrian farmhouses or cozy Arts-and-Crafts hearths, homeowners are letting ceramics escape from the bath or kitchen to become a surface option throughout the house. The Briefs page covers residential products; the Literature section includes an informative universal-design video. —*Joan Blatterman, New Products Editor*

CERAMIC TILES FROM ITALY SET A HIGH STANDARD OF DESIGN

Italy has led the world in ceramic-tile production for decades, and has steadily increased tile exports as well, from 13 percent of total sales in 1965 to over 66 percent of sales in 1995. Where does Italy send all those tiles? First, to Germany, then France. The U.S. is a distant number three. However, concurrent exports of tile-manufacturing equipment and technology helped create major industries in other countries as well. Brazil, for example, now produces an enormous amount of ceramic tile, but almost all of it is absorbed by the Brazilian domestic market.

The Italian Tile Association (Assopiastrelle) is a well-organized industry promotion group, supported by the Italian Trade Commission in foreign countries. Assopiastrelle assists the architect and designer with research and technical publications, online sourcing of tile products, and installation guidance.

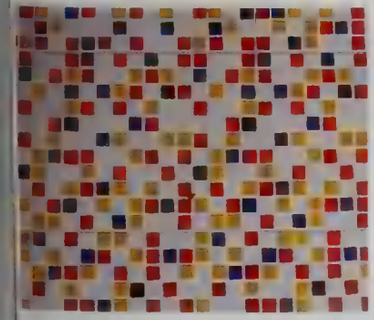
What's new?

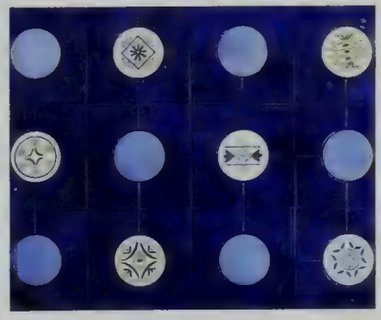
In the '80s, ceramic engineers learned how to recreate random, natural-appearing stone-veining patterns in ceramic, producing a tile with the appearance of natural granite or marble and the impact-resistance and exact dimensions of a manufactured product. This porcelain stoneware has been very successful in the A/D marketplace. Even newer are products introduced last fall at Cersaie (the Italian Tile exposition). A sampling gives a design-trend snapshot of the next wave of imports: rustic-stone looks; wood-like patterns; warm colors, especially blue and yellow. And tiles are getting larger, with 12-in. and even 16-in. squares growing increasingly popular, as they minimize grout lines and make even small walls or floors seem spacious.

A number of new wood-grained patterns in both warm browns and lighter, whitewashed or pickled pastels (right) capture the impression of natural-wood planks and parquet without being line-for-line replicas. When used by themselves, the wood-looks become almost a non-tile tile floor, giving a warm, natural feel to rooms where real wood might be less practical, such as baths or kitchen-entry mud rooms. Other design trends in new Italian tiles are shown below (clockwise, from top left):





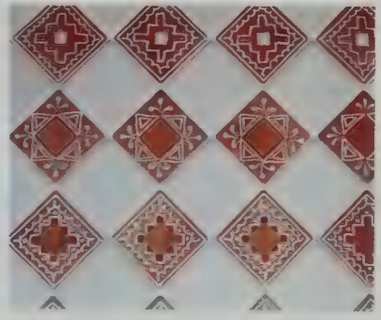






Inspired by the erratic surface and natural, sun-catching sparkle of black lava, Vulcanio from Floor Gres is a single-fired, white-body tile with "crystalline" inclusions that reflect light randomly. Imola's Atrium wall tile uses raised-relief, rustic florals to provide visual interest, shown here set in a diagonal pattern of matching field tiles.





"Time-worn" continues to be a "new" look, creating floors that might look at home in a 14th-century villa. Settecento's contrasting squares seem lifted from an interior painted by Raphael, and Provenza's Chroma is a similar, antique look on a terra-cotta tile. Decorated tiles are particularly appropriate in kitchens or baths, adding an easy-to-maintain touch of color. Blues and yellows are currently popular for these residential tiles; Art Color's circle-and-square tiles combine two trends, with Renaissance floral designs made up in 1997 colorways. Ready-made mosaics incorporate random placement of tiny 1-in. tiles pre-mounted on mesh for hand-done effect within a floor made up of easy-to-install, large-format squares. Mosaic shown: Della Robbia's DKS Flamingo.

North American source information for these and other Italian ceramics is available from The Italian Tile Center, New York City. 212/980-1500 (phone) newyork@italtrade.com (e-mail).

CIRCLE 200

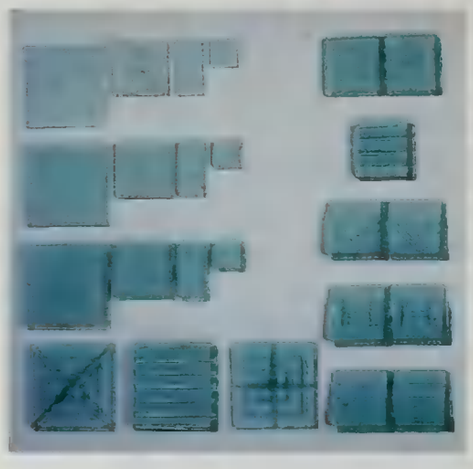
TILES GO TO DISNEY WORLD

For 10 years, the premier tile event in the U. S. has been the International Tile & Stone Exposition, held in Florida each spring. It is sponsored by the National Tile Contractors Association, The Tile Council of America (representing tile manufacturers), and the Ceramic Tile Distributors Association, as well as the tile-marketing groups of both Spain and Italy. Now called *Coverings*, the show goes on in Orlando April 23-26. Call 800/881-9400 for continuing-education information.



▲ Pre-mounted floor mosaics
Swirling Gate Medallion, pictured, is a large-scale (48-in. by 48-in.) tile mosaic assembled and back-mounted in China. The design is made of of five irregularly shaped pieces, which interlock when laid on site to create a seamless floor motif. Mosaics and matching decorative borders work with standard tile dimensions; square medallions can be converted into circles by trimming the corners. Folder illustrates standard patterns and gives prices. 201/482-9000. Cosa Marble Co., Harrison, N.J. CIRCLE 201

► Architectural glass tile
Handcrafted in either a glossy "river wash" finish or sandblasted for a weathered effect, Glashaus decorative elements—tile, bullnose, and cove—are made of frost-proof glass in nine colorways. For vertical use indoors and out, units work well with stone and cast concrete (as window trim, for example). Installation note: tiles edges must not touch each other. 503/281-7751. Ann Sacks Tile & Stone, Portland, Ore. CIRCLE 202





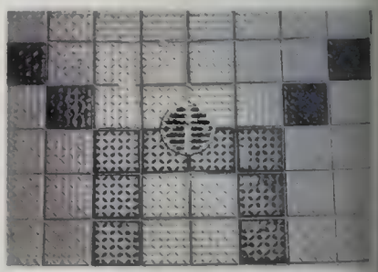
▼ Florentine from Florence
An Alabama take on the "early Renaissance" look, Salerno flooring has a weathered-stone appearance with surface irregularities and eased edges. The line comes in four colorways and coordinating decorative trim: a 13- by 6-in. listello and a corner unit. Field tile comes in a distinctive, 13- by 13-in. size. Rated Class 4+, Salerno is suitable for all residential and most commercial uses. 205/764-6181. Monarch Tile, Inc., Florence, Ala. CIRCLE 203





▲ Realistic marble appearance
Florida Tile is quite proud of the natural, non-directional veining of its Caspian "rustic marble" tile. Offered in three light, off-white shades, as well as deeper Verde, Nero, and Jasper colors, the tile has been designed to work with Florida's Tumblestones II abraded accent pieces. (Photo shows Pearl and Nero tiles in squares and rectangular units set with tumbled-tile decorative inserts.) Available in sizes up to 16- by 16-in. 800/789-TILE. Florida Tile Industries, Inc., Lakeland, Fla. CIRCLE 204

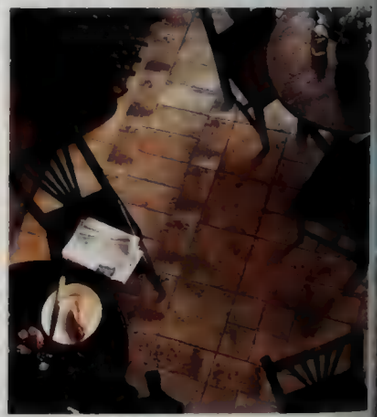
▼ Slip-resist mosaics
Shown used as a shower floor, new Cross-Tread tiles have a raised, diamond-grid pattern said to provide a higher coefficient of friction that won't wear away. Mosaics are part of Crossville's Cross-Colors line, an unusual 3-in. size that minimizes grout lines while letting joints line up with wall tile. Floors can be specified in pre-mounted, custom-colored patterns. 615/484-2110. Crossville Ceramics, Crossville, Tenn. CIRCLE 206



▼ Antiqued large-format tile
A distressed-surface floor, Provence comes in four Mediterranean colors (Maize is shown) with coordinating decos. Field tiles come in sizes up to 16- by 16 in. Meets ADA accessible-route criteria. 800/933-TILE. Daltile Corp., Dallas. CIRCLE 207 ■



◄ Egyptian influence
Desertstone II flooring is said to combine the rustic effect of time-worn pavers with a Class-4, heavy-traffic performance. The 12-in. tiles are available in surface-shaded colors of white, mauve, beige, and light green; decorative patterns in three sizes coordinate with tile colorways. 214/226-0110. American Marazzi Tile, Sunnyvale, Tex. CIRCLE 205



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PRODUCTBRIEFS

▼ Manufactured-stone trims

A weather-proof, cementitious product cast to resemble natural, full-thickness stone, Cultured Stone is made into decorative architectural elements, including Chateau window trim (pictured), door molding, keystones, quoins, watertables and sills, and fireplace surrounds. The four standard colors were chosen to coordinate with roofing and other siding materials, particularly brick and stucco. Installed as an adhered veneer with Type N mortar. 800/255-1727. Stone Products Corp., Napa, Calif. **CIRCLE 208**





▲ Punchy solid surface

Quite a departure from Corian's existing palette, the new Design Portfolio line offers (from top) Festival, Mardi Gras, Kiwi, Lilac, Mandarin, Hot, Sun, and a matte-black Nocturne. Based on color trends identified in the range of custom colors requested by architects and designers, the new collection is suitable for use in retail fixtures and to convey design intent in environments such as movie theaters. A Class 1 material, Corian can be used horizontally and vertically, indoors and out. 800/4-CORIAN. DuPont, Wilmington, Del. **CIRCLE 210**

► Kitchen-to-go

A versatile German-made system, Modula cabinetry is built on a birch frame that can be fitted with shelves, cooktops, sinks, and bins as desired. Free-standing base units (shown) can be 4- to 10-ft long. A 10-ft unit with stove, sink, dishwasher, vent hood, and three cabinets might cost $12,000. 800/765-5266. SieMatic Corp., Bensalem, Pa. **CIRCLE 209**





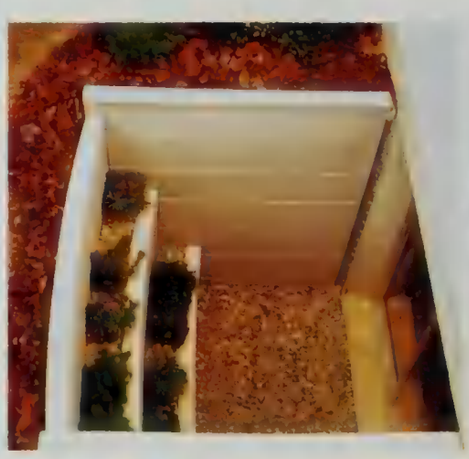
◄ Power to the home office

The Access 5000 raceway organizes the different wires needed for computer modems, fax machines, electric power, and phones, and conceals them all behind an attractive, baseboard-style molding, surface-mounted where needed. Shown here in a paintable white plastic. The raceway can also be specified in a stainable wood veneer. It is UL- and CSA-approved for household use. 800/621-0049. The Wiremold Co., Hartford, Conn. **CIRCLE 211**

► Stainless-steel basins

A new line that works well with Kroin's classic, Arne Jacobsen-designed wall-mount faucet, basins of hand-polished stainless-steel come in four distinctive shapes for either drop-in or undercounter mounting (pictured). Sinks can be ordered in brass as well as various stainless-steel surfaces, finished on one or both sides. 800/OK-KROIN. Kroin Inc., Cambridge, Mass. **CIRCLE 212**







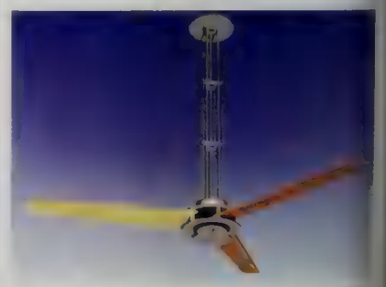
▲ Basement egress windows

The Scapewel is an easier, less-expensive way to create an excavated, terraced window well that meets Section 310.4 of the UBC as an alternative means of emergency egress. Projecting 49-in. from the foundation, the well allows additional sunlight into basement spaces, making them more livable. The unit is made of blow-molded HDPE sections, reinforced with a structural foam core, that interlock to create set-back steps that can be planted. Side panels attach to the window buck or directly to the foundation. 800/854-9724. The Bilco Co., New Haven, Conn. **CIRCLE 213**

▼ Sandblasted glass block

One of several block-pattern and surface options introduced in 1996, Premiere Series Frosted offers privacy with a moderate level of light transmission. The non-reflective treatment can be specified on 8-in. Vue block. Properly detailed, GlassBlock panels can meet UBC seismic criteria. 800/992-5769. Pittsburgh Corning Corp., Pittsburgh. **CIRCLE 214**





▲ Three-blade ceiling fan

The San Francisco fan is intended to work better in architectural and contemporary interior spaces than more nostalgic designs do. A sculptural shape of polished and brushed aluminum with birdseye-maple blades, it was designed by Mark Gajewski. Suggested retail: $690; trade price list available. Canopy options include sloped and flat ceilings; four-speed, reversible motor with wall-mount controls. 313/769-4535. G Squared, Ann Arbor, Mich. **CIRCLE 215** ■





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Spanish ceramic tiles

Well-illustrated brochures highlight the designs and performance characteristics of tile made in Spain, the major source of American tile imports. Products include glazed wall and floor tile, unglazed pavers and terra cotta, porcelain stoneware, and [illegible] for floors and exterior [illegible] Spanish manufacturers make [illegible] pathways, trim shapes, and [illegible] specifically for the U.S [illegible] Trade [illegible] Coral Gables, Fla. [illegible]

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flooring comes in individual planks 47-in. long, 8-in. wide, and 1/4-in. thick. Available with moldings and wallbase to transition between surfaces, the material comes in 34 patterns and colors; a 50-page catalog shows them all in room settings. Pergo is said to be particularly suitable for underfloor heating applications. 800-33-PERGO. Perstorp Flooring, Inc., Raleigh, N.C. **CIRCLE 219**

Ultra-hard tile

A new Graniti Fiandre catalog collates both American and European test data for frostproof, extremely abrasion-resistant porcelain stoneware. All current colors and patterns are illustrated, in applications ranging from luxury homes and cultural centers to factories and subway stations. info@granitifiandre.dsnet.it (web page). TransCeramica, Itasca, Ill. **CIRCLE 220**

Residential cabinetry

Color brochure illustrates standard Arts-and-Crafts style cabinet units in custom configurations in this year's *New American Home*. Clever applications include hobby and gift-wrap centers, and a mud-room locker setup. Timberlake Cabinet Co., Winchester, Va. **CIRCLE 221**

Solid-surface sinks

A 14-page catalog gives dimensions and mounting possibilities for all Avonite sink styles. There are oval, square, and rectangular shapes for kitchen, bar, bath, and powder room. 800/428-6648. Avonite, Inc., Belen, N.M. **CIRCLE 222**

Kitchen-design video

A new design-idea tool from Sub-Zero, manufacturers of built-in refrigeration, a video tour demonstrates how Integrated 700 units can add food and beverage service to any room in the house—if you know where to look. Also new: a design guide for architects and kitchen specialists. 608/271-2233. Sub-Zero Freezer Co., Inc., Madison, Wis. **CIRCLE 223**

Rain-screen EIFS

Technical data sheets describe Sto exterior systems designed to meet the specific requirements of areas that experience frequent wind-driven rain. Intended to remove incidental water that might get behind the EIFS cladding, the installations offer a code-approved secondary moisture barrier, drainage paths and weeps, and a choice of mechanical or adhesive fastening. 404/346-3666. Sto Corp., Finish Systems Div., Atlanta. **CIRCLE 224**

Residential insulations

A 20-page catalog describes all of this maker's thermal and acoustical fiber glass insulation products. Prepared for the home-construction professional, literature covers blown-in and batt types, including flame-resistant foil-faced materials, sill sealers, and retrofit products. 800/523-7844. CertainTeed Corp., Valley Forge, Pa. **CIRCLE 225**

Mahogany entrances

Produced using wood certified as being obtained from managed, sustained-yield forests, the Royal Mahogany door makes a dramatic entrance. Several construction features are said to insure long-lasting, warp-free performance: door panels can "float" between fixed ends; stile and rail components are a multi-ply configuration; assembly uses mortise and tenon joints. Decoratively glazed vision lights, transoms, and side lights are insulating units. A 12-page catalog illustrates glazing options, construction details, and sizes. 770/729-1600. Royal Mahogany Products, Atlanta. **CIRCLE 226**

Kitchen-design software

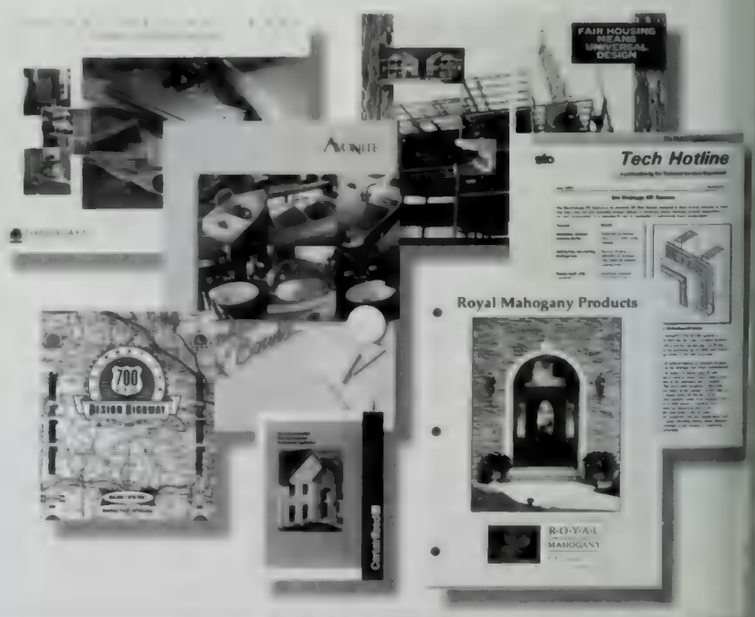
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Design for Fair Housing

Produced by the Center for Inclusive Design & Environmental Access of the School of Architecture and Planning at the University at Buffalo, *Fair Housing Means Universal Design* video helps architects apply the requirements of the Fair Housing Law to homes they design, illustrating how small adjustments in design can go a long way to improve access for all users. $35 charge for video. arch.buffalo.edu/~idea (web page). IDEA, Buffalo. **CIRCLE 228** ■



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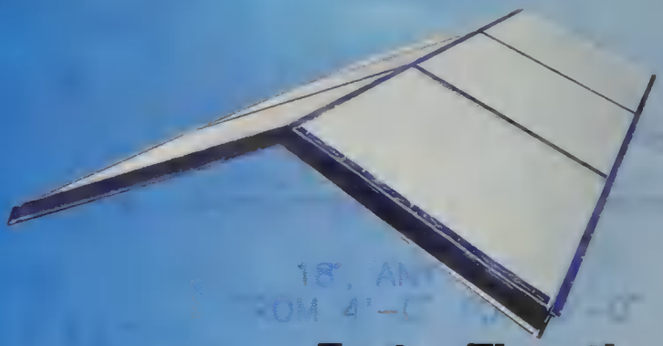
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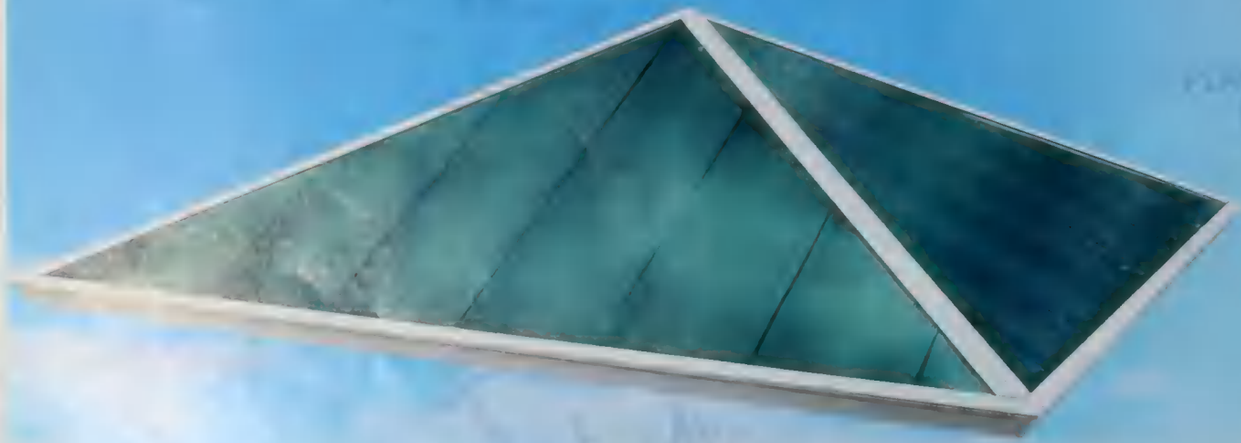
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email: vmichael@artic.edu

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CIRCLE 76 ON INQUIRY CARD

Calendar

April 10–12
San Francisco
On the Edge, a traveling conference of tours and lectures, will bring together people from a wide range of creative fields to explore the latest in environmental graphic technology, materials and techniques, and professional practice—as well as space-planning principles. Call 202/638-5555 or fax 202/638-0891.

April 16–17
New York Coliseum, New York City
Sponsored by the Associated Builders and Owners of Greater New York, a conference and exposition, *Buildings NY,* will update participants on the latest trends and issues in the area, and display a wide range of new products and services, including a session on effective use of the Internet. Call 203/840-5608.

April 17 and May 1
University of Virginia
Charlottesville, Virginia
Michael Graves, the recipient of this year's Thomas Jefferson professorship, will lecture on the foundation and endurance of architecture in contemporary culture. Call 804/924-7116 or fax 804/924-0938.

April 18–20
Cobb Galleria Centre
Atlanta
Billed as the largest exhibition and conference in its field, *Restoration Atlanta* offers 36 seminars, workshops, and technical training sessions on dealing with historical building projects, as well as a large show of available products used in the process. AIA CEU credits are available. Call 508/664-8066 or fax 508/664-5822.

Through April 24
[illegible] University
[illegible] lectures will conclude [illegible] on *Image, Figure,* [illegible] Nicholson at [illegible]

April 23–[illegible]
The University of [illegible]
Commonly used planning formats for [illegible] factories, and other industrial facilities will be the subject of a three-day course offered by the continuing education department. The cost is $995. Call Mary Heberling at 913/864-3969 or register by fax at 913/864-5074.

April 23–30
Renaissance Hotel
Washington, D. C.
The Solar Energy Forum offers the latest information on the viability, sustainability, and prosperity of solar energy technologies. Participants include the AIA, ASME, and the U.S. Department of Energy. AIA president Raj Barr-Kumar is a speaker. Call 303/443-3130.

April 26
Rhode Island School of Design
Providence, Rhode Island
Presentation of six finalists' designs in the World War II Memorial Competition. Call 401/454-6100 or fax 401/454-6647.

Through April 30
Pacific Design Center
Los Angeles
Light fixtures by eight internationally known designers will be on display in the Metamorfosi exhibition space. Call 310/837-0179.

April 29–May 1
Jacob Javits Convention Center
New York City
Lightfair International offers exhibits, four workshops with CEU accreditation, and over 30 seminars on lighting design and applications. Call 800/856-0327.

May 1–3
The Sands Expo and Conference Center
Las Vegas, Nevada
An exposition and conference, Hospitality Design 97, will focus on topics ranging from lighting techniques to renovating landmarks. The sponsors are Hospitality Design magazine and the Network of Executive Women in hospitality. Call 800/765-7616.

Through May 4
The National Building Museum
Washington, D. C.
"Building for the People of the United States of America" exhibits winners of the GSA's biannual competition to award the most locally responsive designs sponsored by the federal government. This year's winners feature courthouses. Call 202/272-2448.

Through May 4
The Art Institute of Chicago
"The Travel Sketches by Louis I. Kahn" reveals the master's progress from artist to architect starting in 1928. Call 312/443-3600.

Through May 4
The Octagon, Washington, D. C.
An exhibition, "Monumental Miniatures," shows souvenir model buildings popular with tourists in the 19th century and collected by architects today. Call 202/638-3221.

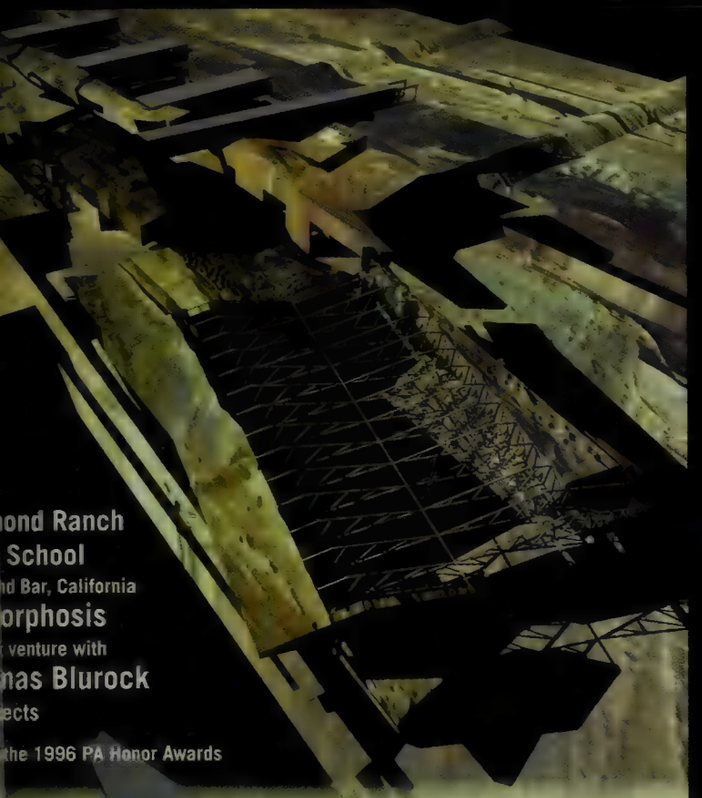
May 8–November 14
Houston, Cincinnati, Denver, New York City, West Palm Beach, San Diego
Two-day *Project Managers' Bootcamps* will be held in the above cities by PSMJ/Resources. Topics will include ways to recover from being behind schedule or over price during the course of design, ways to combat other architects' lower fees, and proven ways to increase the success of proposals. Call 617/965-0055, fax 617/965-5152, or e-mail psmj@tiac.net for costs, times, dates, and locations in each city.

Through May 11
Los Angeles County Museum of Art
Los Angeles
An exhibition presented by the Society of Architectural Historians, "Exiles and Emigres in Los Angeles Modernist Architecture," will feature houses designed by Paul Laszlo, R. M. Schindler, Richard Neutra, J. R. Davidson, and Jock Detlof Peters. Tours of the houses will be offered on May 3 and 10. Contact Alison Cotter at the Society, 213/202-2236.

May 15
Oak Park, Illinois
The Frank Lloyd Wright Home and Studio Foundation sponsors its annual walking tour. This year's program includes eight private residences and three national historic landmarks. Tickets are $40. Call 708/848-9518.

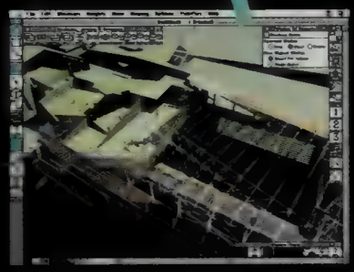
May 16–18
Ernest N. Morial Convention Center
New Orleans, Louisiana
The annual AIA National Convention and Expo is expected to draw over 10,000 architects, and allied design and construction professionals to seminars, business sessions, and exhibits. More than 400 companies will offer the latest in products. This year's theme is "Practice and Prosperity: Serving Client and Community." Architects may earn up to 36 AIA Learning

(continued on page 208)





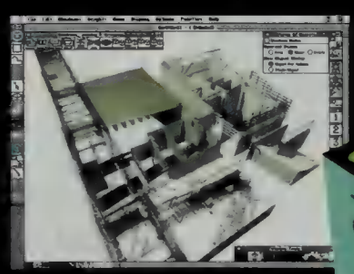
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Thom Mayne
Principal, Morphosis





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As a designer, you need to visualize complex forms and to imagine shapes that do not yet exist. You frequently race against insane deadlines, while your clients grow impatient. That's when you need the modeling power of **form•Z**.

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Grow a model from simple lines to complex **surfaces** or to true **solids** with a few quick clicks. Shape curved **splines** or **NURBS** surfaces as you slip effortlessly between 2D and 3D views. **Resize** your shape, **stretch** it, **extrude** it, **lathe** it, **sweep** it, **project** it, **unfold** it, **deform** it, apply advanced vertex and edge **rounding** to it. Use **metaformz**, smooth **meshing**, image based **displacements**, or multi-source multi-path **skinning** to create smoothly blended **organic** forms. What's more, **form•Z**'s **Boolean** operations work even better than those found on pricey workstation level modeling packages.

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CIRCLE 79 ON INQUIRY CARD

(continued from page 206)

Units. Winners of the DuPont Benedictus Awards for "Innovation in Architectural Laminated Glass" will be announced during the program. For information or to register, call 617/859-4475.

May 17–20
Jacob Javits Convention Center
New York City
The International Contemporary Furniture Fair will attract more than 400 exhibitors in a comprehensive showing. Designers, manufacturers and representatives of contemporary furniture, lighting, floor coverings, wall coverings, and textiles to be present. Telephone 800/272-SHOW.

May 20–July 8
College of Engineering
University of Wisconsin, Madison
The university offers a course in intermediate lighting design from 8:00 to 10:00 a.m. on Tuesdays via WisView, the University's computer-based audiographics teleconferencing system. Participants completing the course should be prepared to take the Technical Knowledge Exam of the Illuminating Engineering Society of North America. Contact Katie Peterson by phone at 800/462-0876 or e-mail at custserv@epd.engr.wisc.edu.

Through May 25
Canadian Centre for Architecture
Vancouver, B. C.
An exhibition, "The New Spirit: Modern Architecture in Vancouver," covers the role of architects in developing the city's culture between 1938 and 1963. Call 514/939-7000.

May 29–June 1
University of Toronto, Ontario
The Congress for New Urbanism will hold its fifth annual conference, entitled "Access and Community." Open to members of the CNU, Urban Villages Forum, and Urban Design Group. Registration deadline: May 15. Contact the Congress at 415/291-9804.

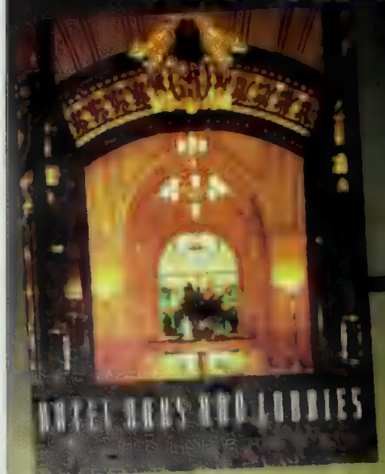
June 1–3
Lingotto Conference Centre
Turin, Italy
The International Facility Management Association will hold its annual meeting. The keynote address will be given by Renzo Piano. Topics will include building systems, the environment, global business strategies, technology, and health, safety, and risk management. The association is currently seeking speaking proposals for its Asian Conference to be held in Hong Kong in November. For information, contact Gina van Dijk, IFMA European Bureau, Brussels, 32-2-743-1542, fax 32-2-743-1550 or e-mail 100332.670@compuserve.com.

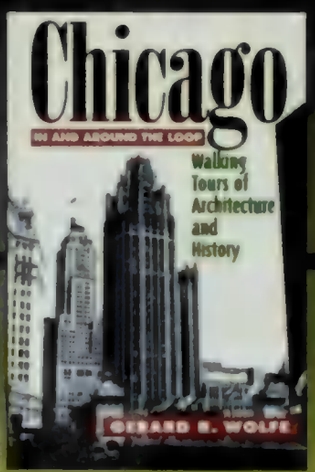
June 5–8
Downtown DoubleTree Hotel
Tulsa, Oklahoma
The AIA Committee on Design will meet to explore the effects of heavy private support for good design in this city, including that of F. L. Wright and Bruce Goff. Call 800/242-3837.

June 9-11
Merchandise Mart, Chicago
NeoCon 97, the annual contract-furnishings showcase. This year's event will also include an emphasis on products and furnishings for hospitality applications. Registration and seminar information: 800/677-6278.

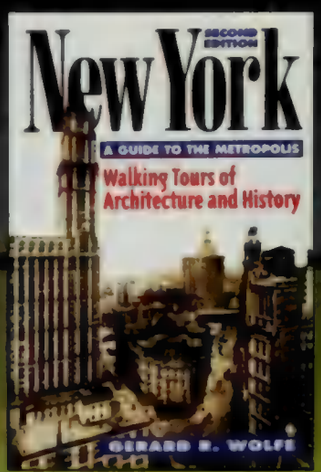
(continued on page 212)

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CIRCLE 82 ON INQUIRY CARD

(continued from page 208)

June 13-13
Renaissance Washington Hotel
Washington, D.C.
The Universal Accessibility Conference, sponsored by the AIA and the U.S. Architectural and Transportation Barriers Compliance Board, will discuss the requirements of access laws in existing as well as new buildings. Description of panel topics and registration information: 301/694-5243.

June 16–19
Pennsylvania Convention Center
Philadelphia
A/E/C Systems 97, billed as the largest computer show and conference for the design and construction profession, will feature the latest in development and application. Included is a program by the International Code Council, which will review changes to the code due for implementation in the year 2000. Call 508/790-4751.

June 17–September 28
Canadian Centre for Architecture
Montreal, Quebec
The CCA will explore the myths underlying a cultural phenomenon with "The Architecture of Reassurance: Designing the Disney Theme Parks." Information 514/939-7000.

June 26-29
Orange County Convention Center
Orlando, Fla.
41st annual Convention and Exhibit of The Construction Specifications Institute. Extended exhibit hours; registration and exhibitor information: 800/689-2900.

Through July 6
The Art Institute of Chicago
Architects from around the world give their impressions of Chicago in an exhibition "Travel Sketches by Contemporary Architects." Call 312/443-3600 or fax 312/443-0849.

Through July 6
The Museum of Contemporary Art
Los Angeles
"Uncommon Sense," an exhibition of six artists' work,will explore social interactions outside the traditional art world. Call 213/626-6222 or visit the MOCA website at www.MOCA-LA.org.

July 16–September 21
The Bard Graduate Center of Design
New York City
A two-part exhibition, "Masterworks of Italian Design, 1960-1994," highlights contrasts between Modernism and Post-Modern design during the period. Call 212/501-3000.

August 7–8
Chicago
(Location to be announced)
BOCA'S *Public Officials Symposium* will bring together local officials, code-enforcement officers, and building-design professionals to exchange information on the latest in hazard-mitigation strategies and problem-solving techniques. Fees are $159 for members and $259 for nonmembers. Call 708/799-2300, ext. 329.

August 8–10
AIA Chapter Headquarters
Seattle, Washington
The Fourth Annual Diversity Conference will unite architects, designers, students, teachers, AIA leaders, and allied professionals in exercises to expand mutual understanding between diverse cultures in practice and education. Call 800/242-3837.

Through September 14
The Museum of the City of New York
Exhibition, "We Dig New York: The Professional Archaeologist of New York City," will show the wealth of historic material to be found even under heavily built cities. Call 212/534-1672.

Competitions

First annual **Business Week/Architectural Record Awards,** sponsored by the AIA, will recognize achievement in creative management practices and design solutions. The deadline for entries is April 18. Categories include design that supports alternative work practices and increased productivity; design that boosts a new corporate image or changing corporate culture; and design that supports corporate or institutional innovation, industrial practices, and new work tools. Winners will be featured in both publications. *Business Week* is read by some six million people, many of whom are potential clients. To enter, call 888/242-4240 or visit the Web site at www.aia.org. Entries will be received at the AIA in Washington, D. C.

The Young Architects Committee, AIA Chicago invites entries in a furniture-design competition, sponsored by Knoll International, for creative work-related furniture. Prizes of up to $1,000 and exhibition of winning projects are offered. Call 312/670-7770.

(continued on page 214)

It's Time To Rethink Stucco

Remember The Alamo!



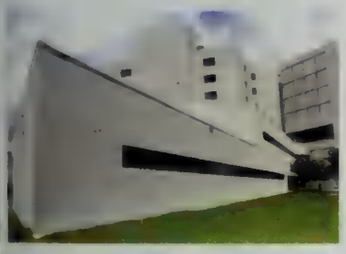
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CIRCLE 83 ON INQUIRY CARD

(continued from page 212)

The Van Allen Institute calls for entries in a Competition Linking Design, Technology, and the Public Realm. It is open to recent or prospective graduates of U. S. schools offering degrees in architecture or related fields. The deadline is May 1. The prize is a two-month fellowship at the American Academy in Rome. Call 212/924-7000, fax 212/366-5836, or e-mail vanalen @designsys.com site: http://www.vanalen.org.

The Association of Collegiate Schools of Architecture and the American Wood Council invite entries in the **1997 Carl E. Darrow Student Design Competition** by May 15. The award will be for significant uses of wood in a mixed-use neighborhood transit center. Write Thomas Gelsanliter, ACSA, 1735 New York Ave. NW, Washington, D. C., or call 202/785-2324.

Entries in the 17th annual **Builder's Choice Design and Planning Awards** are due June 3. The event is jointly sponsored by *Builder* and the AIA Housing Committee. Categories are custom housing, production housing, community planning, remodeling and rehabilitation, light commercial buildings, and design details. Entry forms and fees ($195 per project and $95 per special focus category) are due May 13. Call 800/726-8220 for additional information or fax form and credit card information to 202/785-1974, to the attention of Rebecca DePietropaolo.

The Cincinnati Forum for Architecture and Urbanism is inviting entries to an exhibition **Unbuilt Cincinnati** to be held in April 1998. Drawings, models, or other forms of presentation should show projects planned for downtown Cincinnati or immediately across the Ohio River in Newport and Covington, Kentucky. Phone David Scheer at 513/381-8831, fax 513/381-8841, or submit materials directly to his attention at 116 West Sixth Street, Cincinnati, Ohio, 45202

An international design competition for architects, designers and students to design furniture or objects that predominately use desk-top linoleum is being sponsored by **Forbo Industries**. Winning designs will be exhibited at the Arbitare Il Tempo Furniture Show in Verona, Italy, and the designers will receive an expense-paid round trip. The first-prize winner will also receive ECU 5,000 or approximately $6,000. The deadline is April 15. Entry packets and information can be obtained by calling 800/233-0475.

Portland has issued a call for entries in its awards program, **Architecture + Energy: Building Excellence in the Northwest**. Recognition will be given for design excellence in buildings that integrate energy-efficient technology. The program is open to nonresidential buildings in Idaho, Montana, Oregon, and Washington State. Sponsors are Portland General Electric and the Bonneville Power Administration. The deadline is May 30. To request an entry packet, contact AIA/Portland, 315 S.W. Fourth Avenue, Portland, Oregon 97204 or call 503/223-8757.

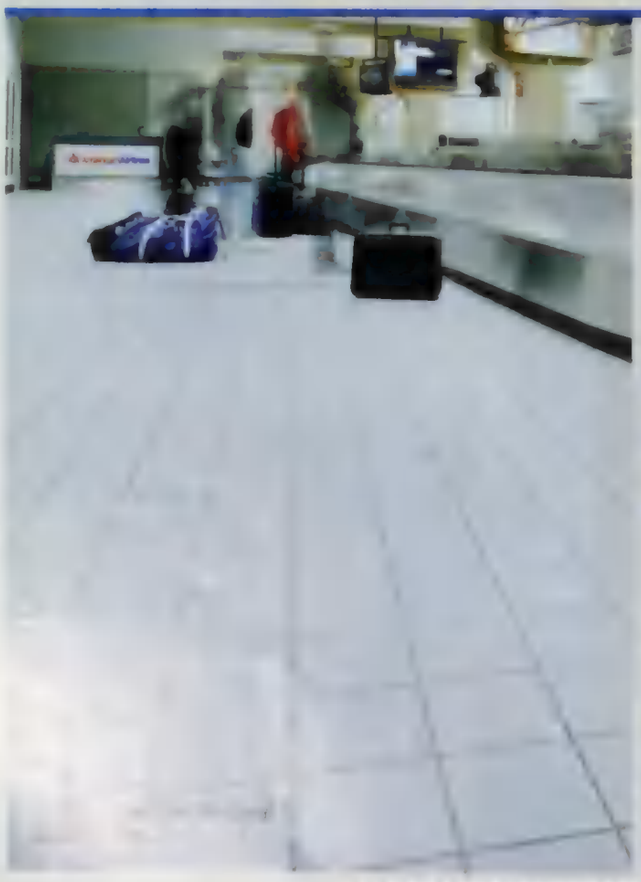
The Village of Plainfield, Illinois, together with Plainfield Partners Commercial, Ltd., and the township Park District are holding a one-stage competition for the design of a new 300-acre **Plainfield Town Center** to be located directly across the DuPage River from the historic downtown. Entries are due May 1. Prizes are $10,000, first; $5,000, second; and $2,500, third. To register, contact the Plainfield Design Competition, Village of Plainfield, 32145 West Lincoln Highway, Plainfield, Illinois 60544. For information, call 815/436-7093.

The **Shinkenchiku Residential Design Competition** 1997, an annual competition sponsored by *The Japan Architect*, will be judged this year by Swiss architect Jacques Herzog, of Herzog & deMeuron.Theme: House of Collaboration. Entrants are asked to work in collaboration with an artist or art student to draw, on two sheets of paper (no electronic media, please) an exhibition space for contemporary art, on any site. No entry fee. Fax Tomoko Ochiai, Editor, The Japan Architect, for further entry requirements: 03.3811.0243. Entries must be received in Tokyo by September 10, 1997.

(continued on page 216)

"MAPEI Offered The System We Were Looking For...It Worked Well and It Worked FAST!"

Roddy Boggus AIA, Principal
Hodges ▪ Boggus Architects, LLC
Dallas/Fort Worth, Texas



"We decided to go with MAPEI because they had the system we were looking for," says Roddy Boggus, principal of project architects Hodges ▪ Boggus Architects, LLC. Says Roddy, "**No loose tile, no discolored grout, no complaints**... I don't have to give the American Airlines installation a second thought. I'll be specifying MAPEI in the future!"

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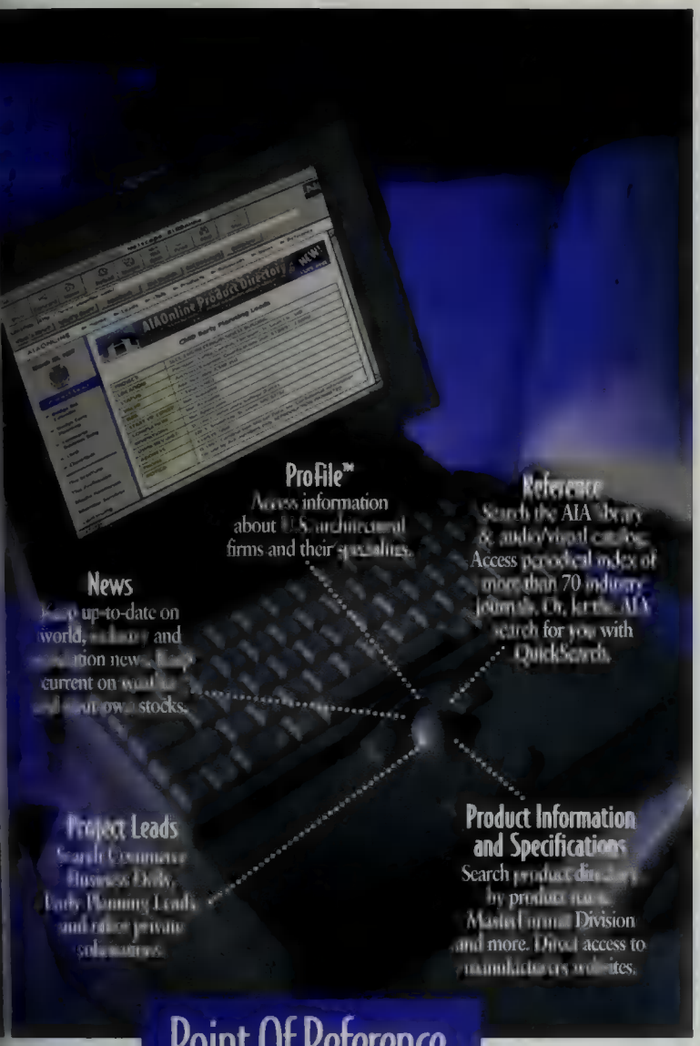
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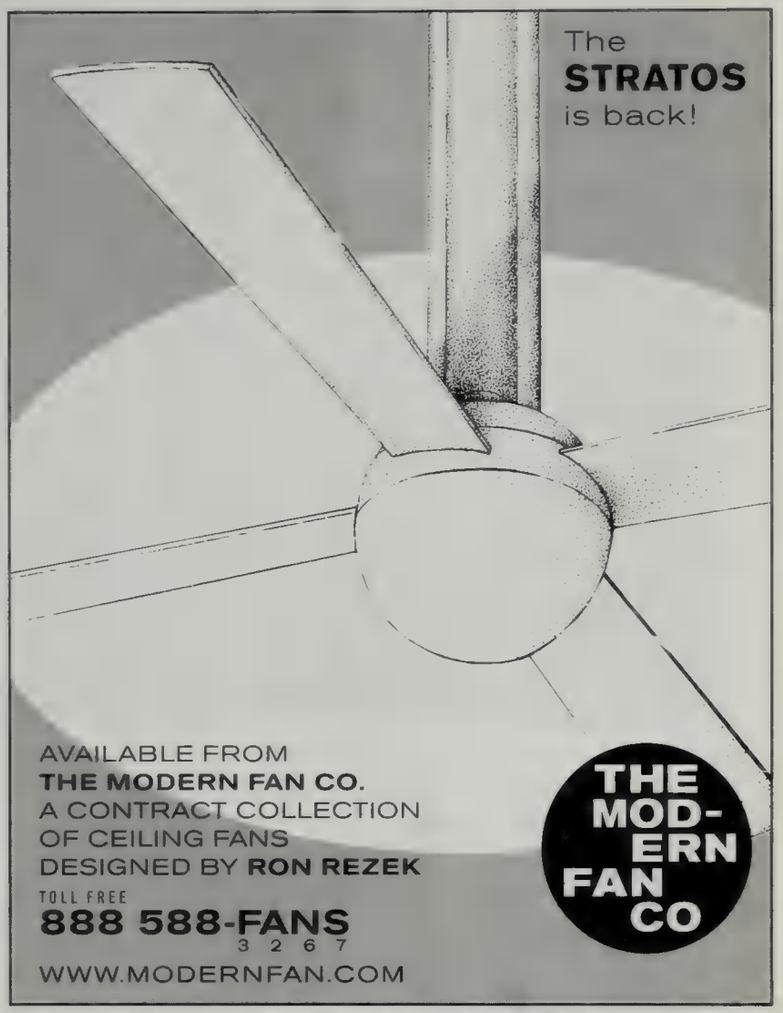
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CIRCLE 85 ON INQUIRY CARD

Gio Ponti, *edited by Ugo La Pietra, with essays by Enzo Frateili, Agnoldomenico Pica, and Vittoriano Viganò. New York: Rizzoli, 1997, 448 pages, $75.*

by Clifford Pearson

Architect, interior designer, furniture designer, painter, founding editor of Domus magazine, critic, and bon vivant, Gio Ponti was all over the map—both literally and figuratively—during his long career. It was Ponti's roving curiosity and eclectic designs, though, that make him hard to pin down. As Ugo La Pietra says of Ponti in his introduction, "It is also true that he was, and still is, an inconvenient figure to classify."

This heavily illustrated volume covers Ponti's entire career—starting with his Classically inspired work for the Italian porcelain company Richard Ginori in the 1920's, and including his Moderne offices at the Montecatini Building in Milan in 1936, interiors for luxury liners such as the Andrea Doria and Oceania in the 1950's, the Pirelli Tower in Milan in 1956, chairs for Cassina and others, bathroom fixtures for American Standard, and the Denver Art Museum in 1972. The book's essays place Ponti in his historical context and explain some of his strengths and recurring themes.

Tadao Ando: The Colours of Light, *by Richard Pare. London: Phaidon, 1996, 264 pages, $95.*

The heaviest 264-page book this reviewer has ever lifted, this collection of photographs by Richard Pare is printed on special-stock paper with six-color reproductions. Pare, a former curator at the Canadian Centre for Architecture, photographed Ando's work from 1985 to 1996 using only daylighting. The book, which includes quite a few gatefolds, covers 27 projects including the Church on Mt. Rokko, the Forest of Tombs Museum, the Rokko Housing II development, the Church on the Water, and the Nariwa Museum. Pare's images don't try to document each project, but rather to capture its essence. An introduction by Tom Henegan, a British architect who works and teaches in Japan, examines some of the key issues in Ando's architecture and Pare's approach to it.

Robert A.M. Stern Buildings, *by Robert A.M. Stern. New York: Monacelli, 1996, 496 pages, $75.*

A straightforward monograph that focuses attention on the buildings, not the banter, this book organizes Stern's work into four categories: workplaces, "goodtime places" (such as hotels, stores, and Disney projects), public places, and "places of learning and worship." Other than some cutesy category names on the contents page, the book has fewer affectations than many other recent monographs. Lots of big, full-spread photographs and short project descriptions make it fun for the eye and easy on the mind. Even the architect's introduction is an easy read, touching on his view of history and narrative without getting too deep. But the emphasis on pictures rather than words may have gone too far with the elimination of legends from the floor plans and drawings.

Raimund Abraham: [Un]Built, *edited by Brigitte Groihofer. Vienna: Springer-Verlag, 1996, 316 pages, $95.*

Austrian architect Raimund Abraham is best known for his writings and theoretical works on paper, many of which are included in this book. But Abraham, who has lived and taught in the United States since 1964, began to garner attention outside academic circles a couple of years ago when he was selected to design the New Austrian Cultural Institute in New York City. That project, which Abraham designed as a steeply sloped metal-and-glass sliver, was postponed for a while, but is said to be close to construction.

Omissions and Corrections

The prime-contract electrical engineers for Northern Telecom [RECORD, December, 1996, pages 40–44] were Norton Electric. Alfa Tech Bouillion was a subcontractor.

The architect-of-record for Manville Apartments for the University of California, Berkeley, [RECORD, January, pages 42] is Crosby Helmich Architects.

The Big Wood River, site of a home designed by Chase/Diengott [RECORD, March, page 129] is in Idaho, not California. ■



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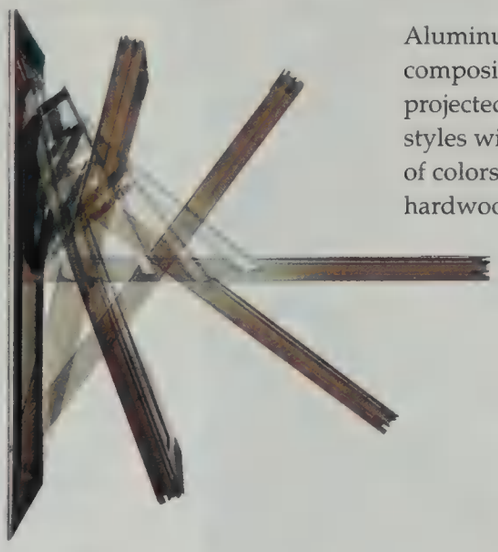
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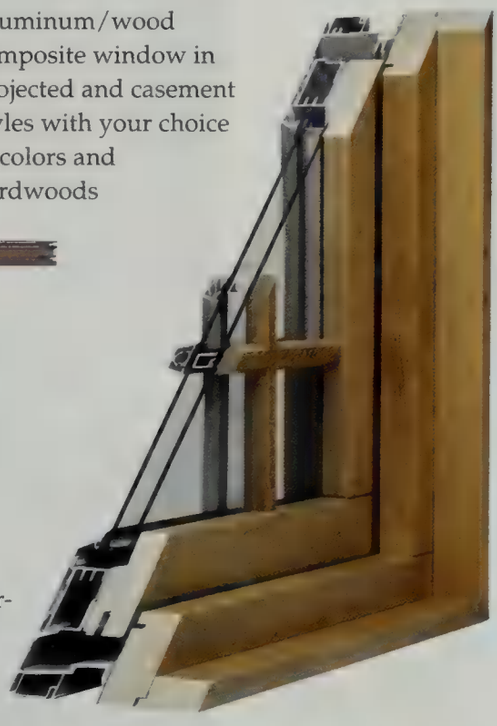
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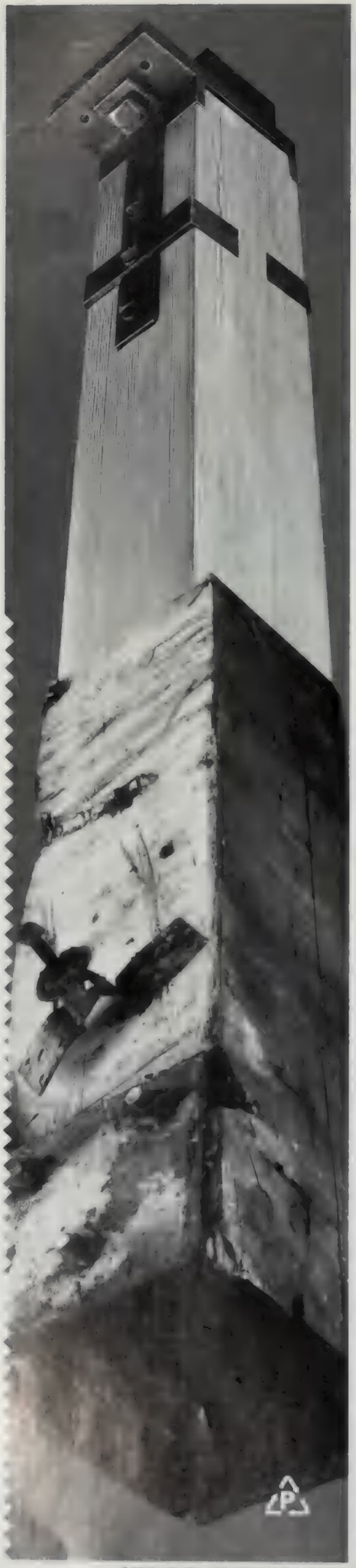
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and reason for optimism. The lead editorial seems to indicate a solid conceptual basis for RECORD's enhanced importance. The letter from the AIA president reinforces this potential. The featured building projects were also mostly positive.

There were some editorial errors (e.g., the ratios of Phoenix size to population; the assumption that settlement patterns must/should have definite "edges"; the statement that mountains are visible from tightly enclosed courtyards; the assumption that a central beam on the long axis enhances an exhibition space). But tendencies toward uncritical enthusiasms were mostly restained.

It is hoped that such restraint will also permit more rigorous assessments by the magazine's "independent voice." The tendency to find and to express delight in most of the work you publish is both natural and commendable; but there is also a need to be more forthright in many instances. Many of the current projects being done by the so-called "New Urbanists" should be subjected to such really critical evaluation and reportage.

William A. Stewart
Marble Falls, Texas

New Urbanists in Miami

You will be interested to know that the Hometown Plan article [RECORD, January, 1997, pages 136-137] was inspiring to the locals; the [Miami] vice mayor held it up during the cable broadcast of a City Commission meeting, beaming. Congratulations on the redesigned RECORD. The magazine has a fresh new look now. (And perhaps that also signals an editorial "thaw"?)

Victor Dover
Dover, Kohl & Partners
Miami, Fla.

Cabrini-Green in focus

As a participant and member of the team of designers placing third in the Cabrini-Green Design Competition sponsored by the *Chicago Tribune* four years ago, I read with interest Blair Kamin's recent article, which posed the question, "Can Public Housing Be Reinvented?" [RECORD, February, 1997, pages 84-89]. I would suggest that the answer is a definite yes, although, as Kamin tactfully alludes in his article, it is not likely to be as simple an answer as those currently involved might hope.

For all the benefits that our free-enterprise system brings to our way of life, "the market," if left to its own, will not improve or correct fundamental social problems of the type and magnitude that have contributed to the evolution of the current crisis in public housing.

Nor will the latest intellectual abstraction of the planning and design community, the "New Urbanism," result in any real change in the lives of current public-housing residents, unless it reaches for solutions that go beyond its current formula—an approach that reflects a rather idealized, bucolic, upper-middle-class way of life. That is, after all, just the sort of well-intentioned, myopic intellectual abstraction that brought us the physical reality that is public housing today.

If the goal, as professed by those involved, is to improve not only the physical environment of public housing (without rampant gentrification), but also the lives of those who live there, it can be done. However, it cannot be done for them, to them, in spite of them, or any other way, but with them.

The residents must have a real and substantial role in the process, because it is the process that will ultimately determine success or failure, not merely what gets built.

Architects, planners, developers, politicians all come to the process with either something to prove, to gain, or both. Not until those with the money, the influence, and the power to *(continued on page 218)*

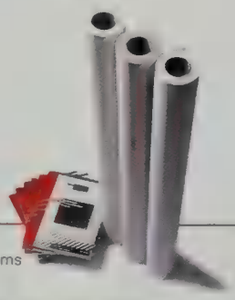
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help are willing to sublimate their self-interests and work at evolving solutions that fundamentally involve, and thereby change, the life experiences of those who live in public housing will a meaningful change be possible, regardless of what physical form results.

Physical change is easy; all it takes is money. Social change requires not only money but commitment, understanding, patience, creativity, trust, selflessness, and sacrifice by all parties involved. I would hope that those who have the ability and power to work for real change look beyond the latest planning "ism," toward their own personal experience, the work done, and the ideas raised in the *Tribune*'s competition.

Ronald Reed, AIA
Arlington Heights, Ill.

EIFS defended

I am writing to express my concern and to provide some needed balance to the article "Detailing That Weathers Better" in your November, 1996, issue [pages 42-44]. If I were an architect or owner, after reading your article, I would be questioning any future decisions to use EIFS on my building. Your article seems to suggest that EIFS is a relatively new product, whose reliability is still in question. EIFS has been as integral part of the construction industry for almost 30 years. Hundreds of thousands of successful projects testify to the reliability and durability of EIFS. The recent Drucker report, issued in September, 1996, shows EIFS as the most widely used exterior cladding in the nonresidential market with 175 million sq.-ft installed in 1995.

In the commercial marketplace, architects do a fine job of designing and detailing with EIFS. They assist in coordinating the different trades and check conformance to construction documents. In areas of doubt, we recommend architects be retained for on-site supervision. This would hold true for the residential market as well. EIFS has been used in single-family houses for over 20 years. The product has grown in popularity within the last 10 years as homeowners and homebuilders have become more familiar with its features and benefits. Upwards of 25,000 homes a year are built with exterior insulation and finish systems. The residential construction problems mentioned in your article were the result of poor workmanship (by many trades), inattention to detail, and disregard for building-code requirements.

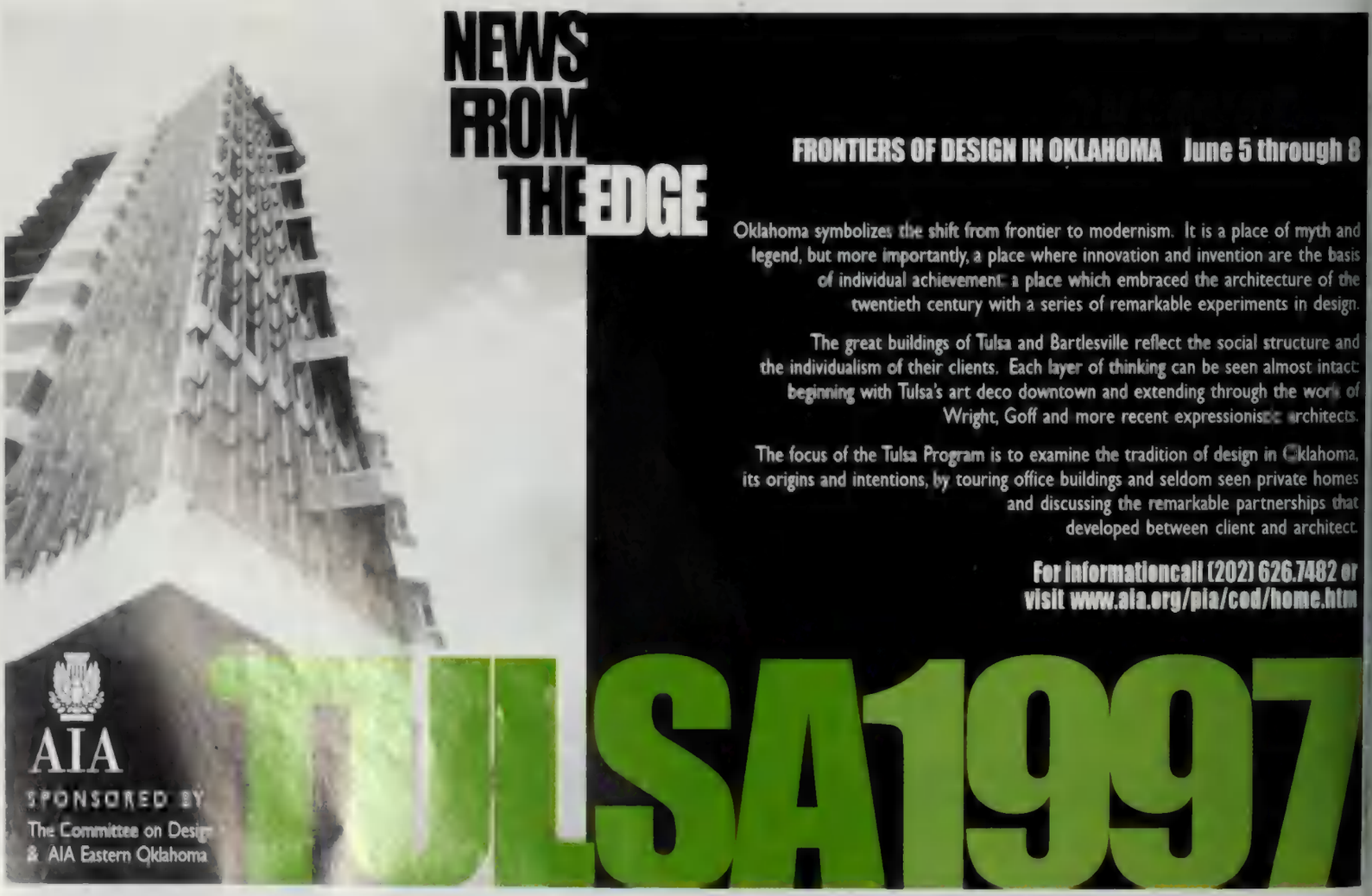
EIFS manufacturers agree that better communication and education are necessary to insure quality construction. The Dryvit Company meets with builders and contractors around the country to facilitate good-construction practices and proper applications. *A Builder's Reference Guide* has been published by Dryvit and is being used successfully by thousands of contractors. Other manufacturers have also published documents to assist builders and contractors.

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Steven J. Collins
Vice president, marketing
Dryvit Systems, Inc.
West Warwick, R.I.

Library of Congress card files

I have to take issue with a "fact" stated in the article on the Library of Congress [RECORD, February, 1997, pages 106-111]. As an intern at the National Building Museum, I visit the Library of Congress often in my



arch for exhibitions. Please note that ard catalogue has *not* been ced with computers, but has been mpanied by computers—and thank ness.

I am high-tech; I run web pages. But oying the card catalogues before all nformation has been transferred to uters would be a big mistake.

ly, the Library of Congress has not this yet, though I've heard it's tried. ! hope a warning is sounded, from es to museums, before precious nation is lost in a high-tech frenzy. :ects can do their part, whether ren- ng old libraries or designing new I think an old-technology holding would be appropriate, as there will s be old technology and time ed to upgrade.

Day Kozak
vn Heights, Md.

managed firms

to congratulate you on the first of our new magazine. I like the new t, the pages devoted to *News*, and mber of projects featured.

My favorite, however, is the article "Lessons from America's Best Managed Firms." While photos and descriptions of well-designed projects are inspiring, I find the helpful tips on how to run a competitive business to be equally inspiring. Keep up the good work.

The magazine is a symbol of how the AIA is on the cutting edge of the profession and is doing a great job of presenting this to the profession and the public. I'm looking forward to future issues.

William Wiedower, AIA
Little Rock, Ark.

The last word on Peru?

I have been following the *Letters* section of your magazine and the ongoing "Bad Will" comments resulting from the current [United States] embassy guidelines and their built products. I was very sad to corroborate that what is true here is also true for other countries. Our new Caracas American embassy that opened two years ago is an unhappy urban and architectural mistake—a move backward.

Buildings such as the one in Peru [RECORD, October, 1996, pages 78-85] criticized by Cynthia Richardson [RECORD, December 1996, page 145] and Rudy Schwarz [RECORD, January, 1997, page 16], as well as Gunnar Birkerts's suburban fortress we now have here in Caracas, are the worst kind of ambassadors produced by any United States administration.

Although mine have been the only public comments, the community of Caracas is tacitly mad along the same lines as Schwarz's comment on "non-contextual monoliths" and Richardson's "King Kong ugly boxes."

Hannia Gsmez
Benacerraf & Gsmez Arquitectura
Caracas, Venezuela

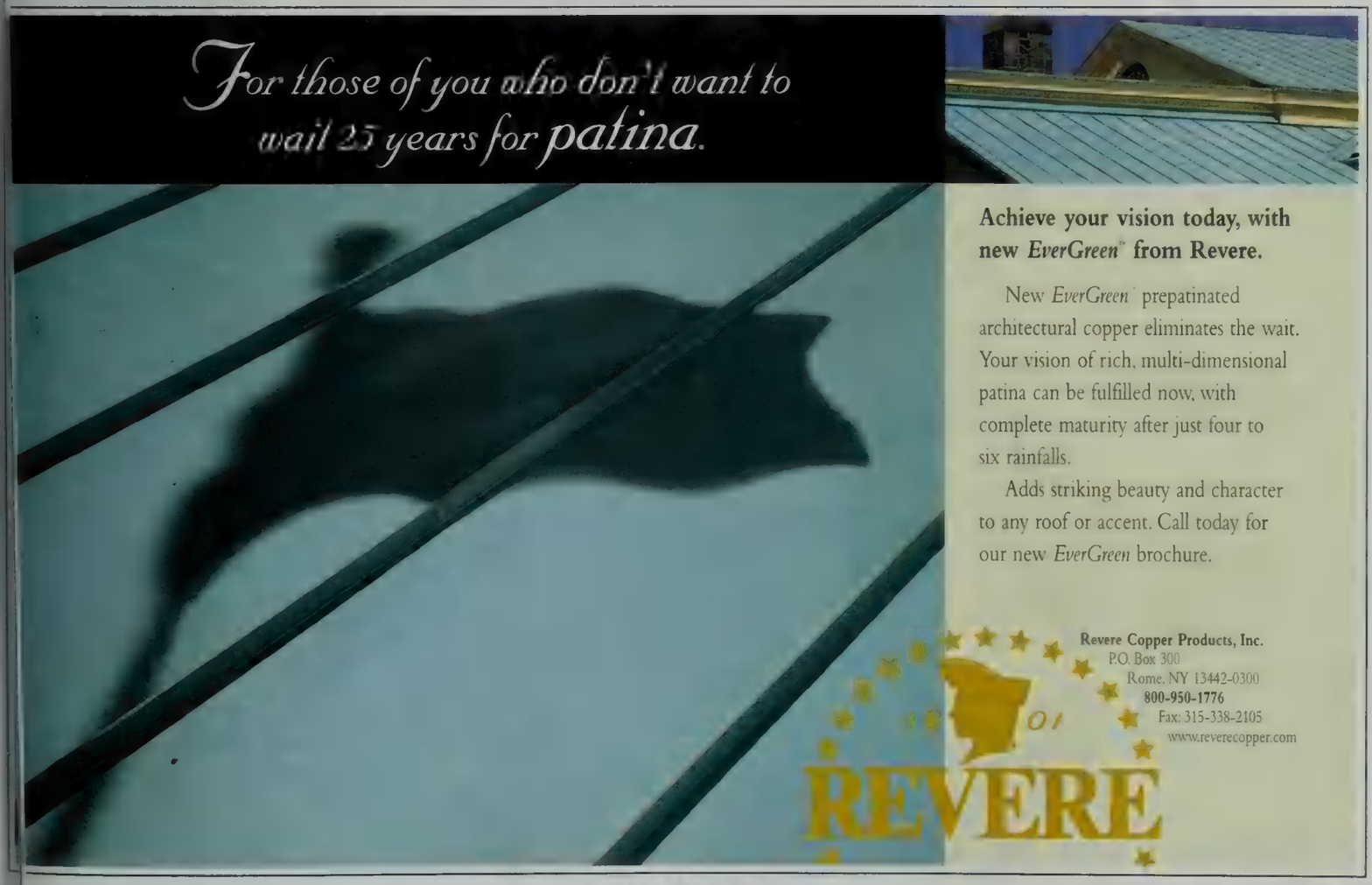
The end of the Boldness Gap?

I saw your *Dialogue* in the February issue on American architecture losing its boldness ["The Boldness Gap," RECORD, November, 1996, pages 76-79]. And then I saw the Disney Concert Hall [February, 1997, page 28], Las Vegas's New York-New York [March, 1997, pages 76-79], Kuala Lumpur's Linear City [February, 1997, page 30], the Samitaur Building [February, pages 52-63], and Wagner Park [February, 1997, pages 64-69].

Did I miss something?

J. Almont Pierce, AIA
Pierce Architecture
Bailey's Crossroads, Va.

RECORD may edit letters for grammar, style, and space availability, taking care not to change the author's meaning. ■



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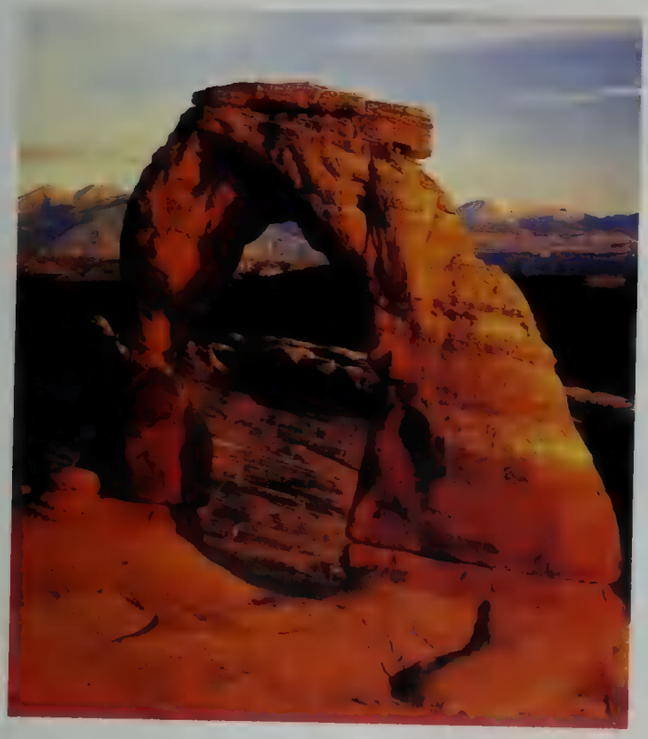




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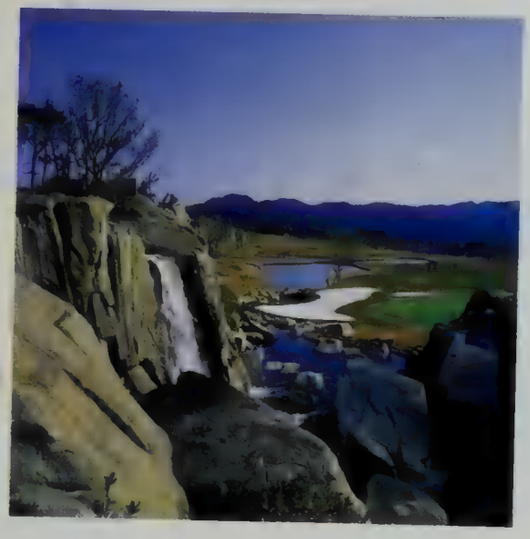


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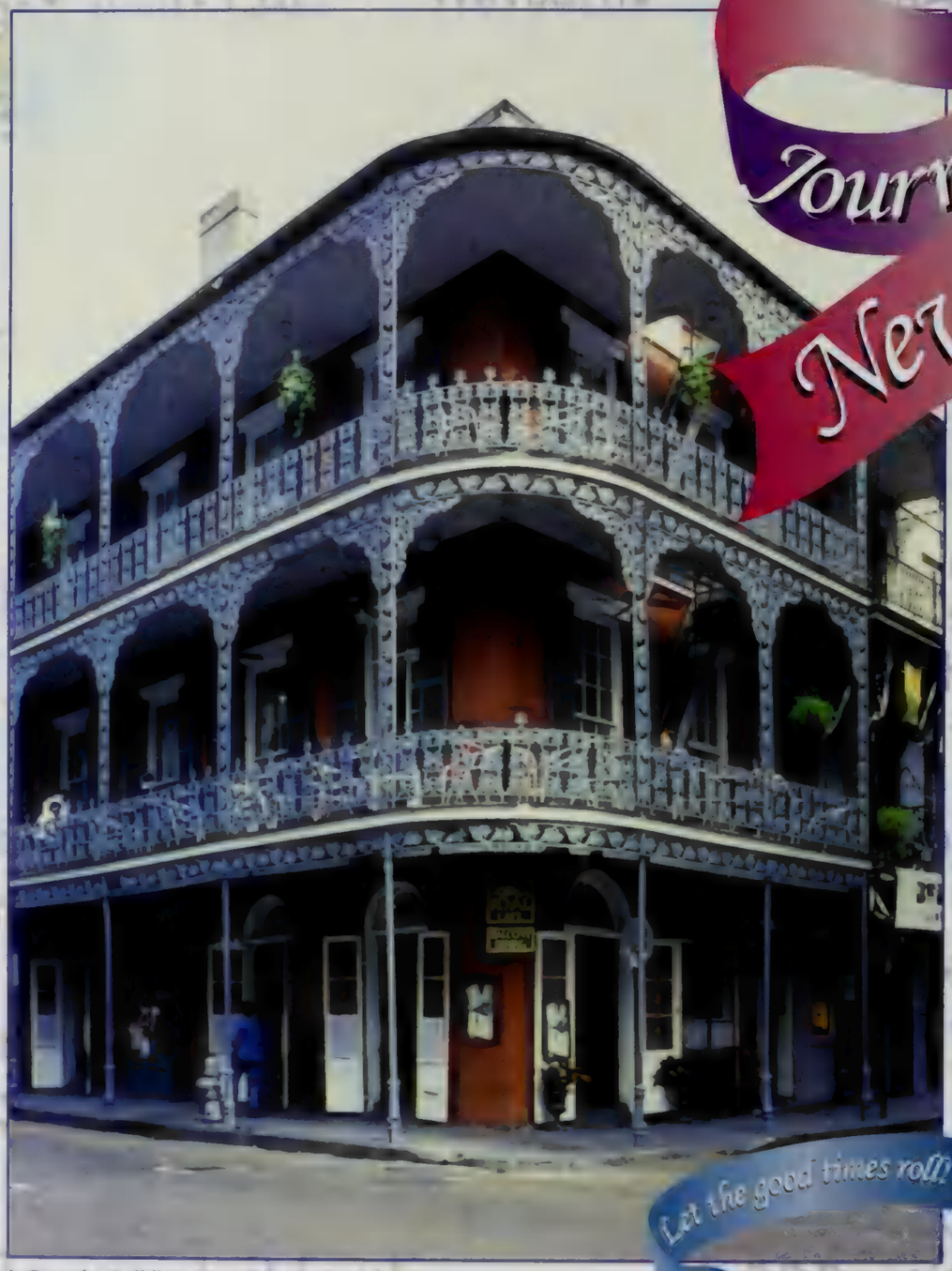
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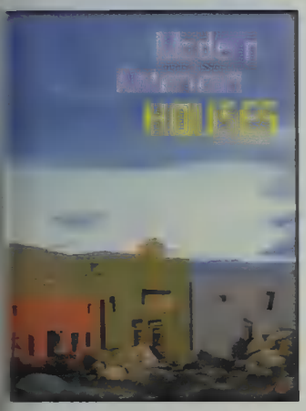
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These questions refer to the continuing-education story, "Designing houses: how skillful firms succeed in a tricky business" (page 133-136). See page 236 for answers and self-report form.
—Mark Scher, AIA Director of Continuing Education Programs and Products

Questions:

1. What is the key to making residential design profitable?
Answer

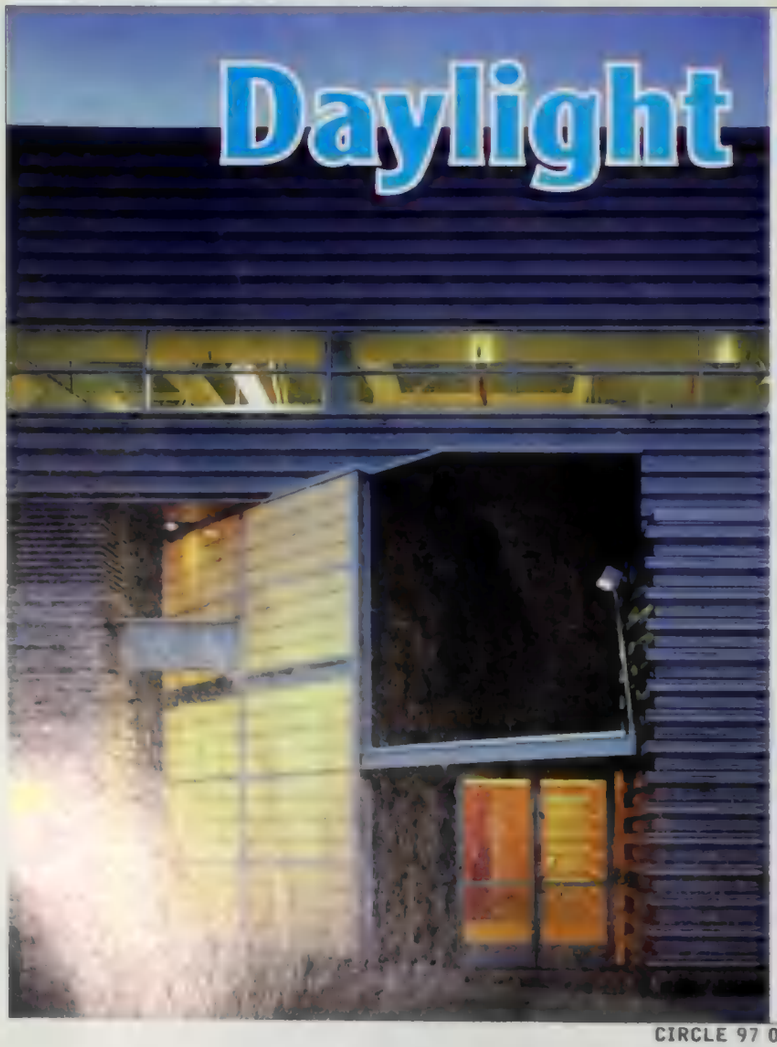
2. List four tips for working with residential design clients.
Answer 2a.
b.
c.
d.

3. What are two organizational approaches that can minimize overhead expenses?
Answer 3a.
b.
c.

4. Cite three project-delivery methods that are current in the marketplace today.
Answer 4a.
b.
c.

5. What are the pros and cons of working with contractors on a negotiated-fee basis, and how might the architect respond to the chief criticism of this practice?
Answer 5.

6. What are five work-process techniques for ensuring that clients get the project they want at the budget they can afford?
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ANSWERS:

◆ Answers refer to the article, "Designing Houses: How skillful firms succeed in a tricky business" (**pages 133-136**).
See page 234 for questions.

◆ To receive CES credits, fill in the Self-Report Form below.

1. Successful residential design firms advise separating the fee for preliminary design into an hourly arrangement or a fixed fee for a defined scope.

2a. If the client is a couple, draw out the quieter partner. **b.** Encourage couples to work out their disagreements before meeting with you. **c.** Get sign-offs from the client at appropriate phases in the design. **d.** Have confidence in and respect your client and the intelligence they bring to the project.

3a. Even if yours is a large firm, organize the project so that it feels like a small office to the client. The partner-in-charge should be committed to a high level of personal involvement and frequent client contact.
b. Another approach is to encourage entrepreneurial project architects within the firm, and keep the team to the minimum number of staff demanded by the project phase.

4a. Use the traditional design-bid-build method. **b.** Team with a contractor, while maintaining separate corporate identities. **c.** Use design/build project delivery.

5. Projects where the contractor builds for a negotiated fee may be more costly than bidding-out the project, but involving the client in decisions about materials choice and project scope can lower construction costs. Advantages in working directly with a builder are that many offer better technical solutions, more suitable product specifications, better cost estimating, and a smoother and higher quality construction process.

6a. Hold at least two programming meetings to explore the client's daily activities and the specific rooms and activities desired. **b.** Show the client two to five alternatives, including images, to determine preferences for room shape, size, and placement. **c.** Consider presenting modest chipboard models that can be readily altered during meetings. **d.** Where budgets won't permit a high level of custom details, limit drawings to the most necessary elements. **e.** Get an accurate idea of cost early in the project. This may mean obtaining preliminary estimates that include price breakdowns across trades and for possible alternatives. ■

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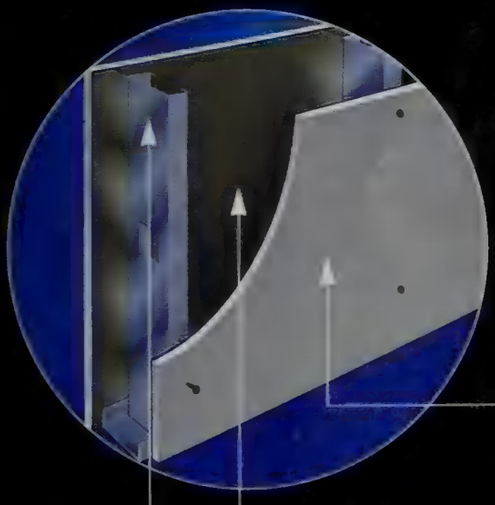
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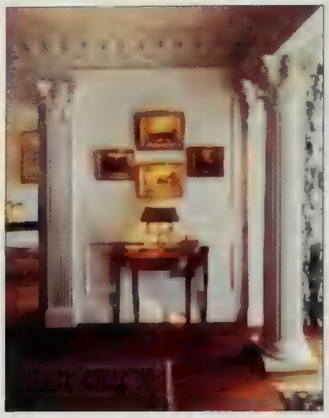
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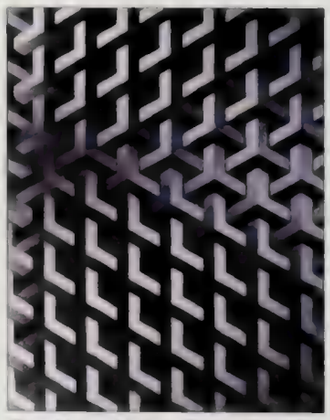


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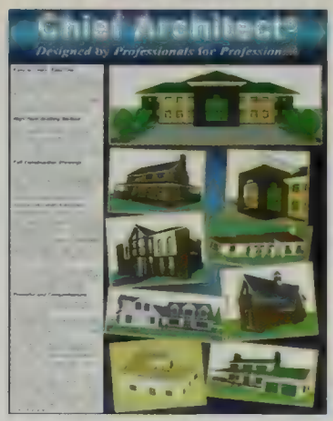


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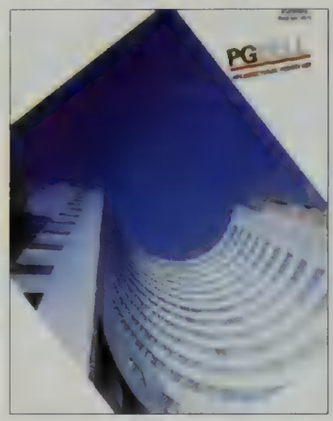


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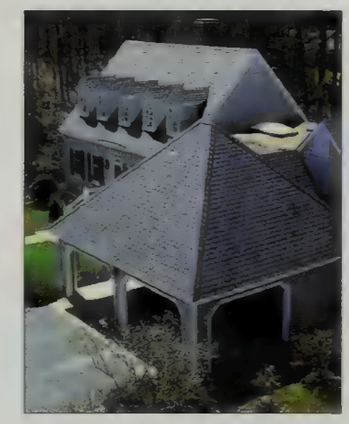


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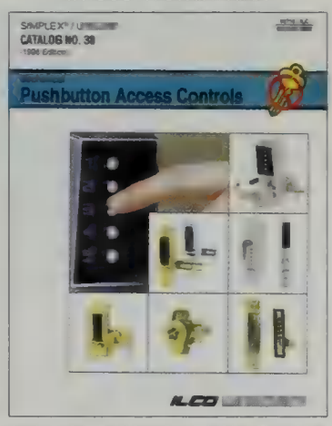


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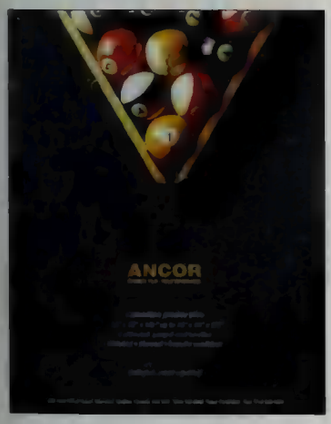


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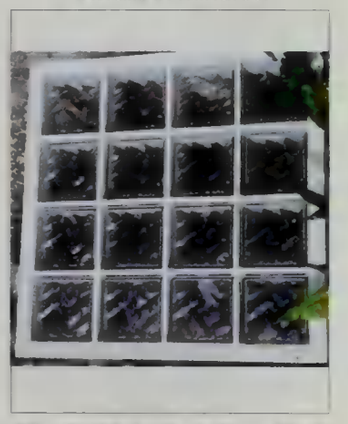


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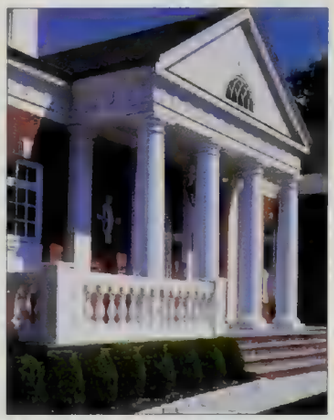


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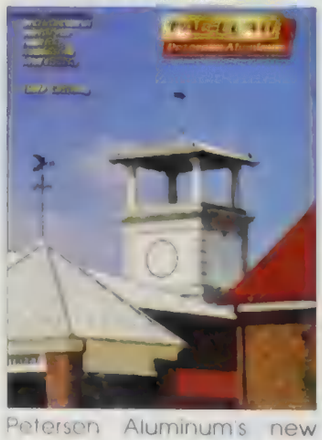


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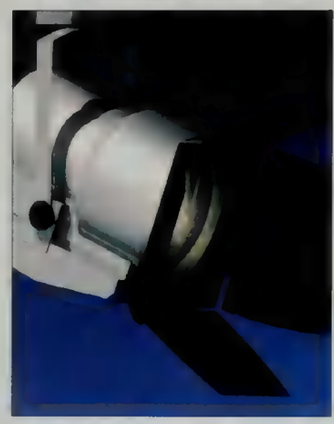


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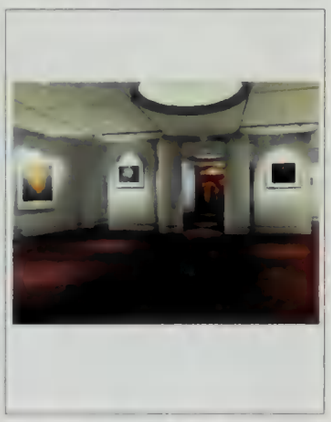


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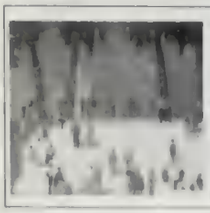
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E

THE FUTURE: Engineers extrapolate the home of the near future based on today's technology.

BY JOAN BLATTERMAN

By 2010, will the average house be smaller and thriftier with water than households are today? Will electric-utility deregulation and consolidation boost the price of a kilowatt-hour to the point where solar is a cost-effective power source? Will residential materials technology respond to the environmental hazards described by the emerging debate on global warming, or will it still be business as usual?

A consortium of engineering associations, representing electrical, chemical, mechanical, civil, and hvac professionals and major engineering-oriented firms such as Fluor and Bechtel, marked National Engineers Week (February 16-22) by asking its members: "How will the application of current technology make the home of the future more environmentally friendly?"

According to the engineers, a hypothetical villa (perhaps built for a WOOPIE—well-off older person), might look like this:

Homes are smaller, and definitely are built closer together (1). While there are more people, the amount of available land has stayed the same. Since the exterior envelope is much more thermally efficient (see 8 and 21), you might need a weather station (2) to tell you how to dress for outdoors. And the weather station can turn on under-pavement heating coils (6) to keep drives and walks clear of ice and snow if winter storms are predicted. Roof panels (3) double as hot-water heaters and electricity generators, with thin-film photovoltaics or polycrystalline cells and inverters producing 120-volt current. Where local wind conditions permit, a windmill (19) helps out. Another energy saver: photosensitive glazing (4) that adjusts its shading coefficient in response to sunlight levels, going from clear to opaque. And ambient-light sensors lower electric-light levels to further save kilowatts.

After a rocky start in the late '90s, the electric car is widely used. An in-home charging port (5) now replaces the corner gasoline station. Drives and sidewalks (7) are paved with ■ permeable surface that prevents damaging rainwater run-off and recharges ground-water levels. Thanks to improved insulation systems, building-envelope components such as the roof (8) and exterior walls (21) are a very energy-efficient R-40 plus. In-home electronic entertainment now includes a holographic-imaging set (9). And "The Smart House" is finally here: computers (10) control hvac, security devices, and even adjust the filters of whole-house air cleaners (16) to respond to high air-pollution or pollen levels. "Fuzzy logic"- controlled robotic cleaners (11), first used in healthcare facilities in 1998, are common in homes to dust and vacuum.

Clean water is treated as a valuable resource, and toilets (12) use vacuum pressure to flush. Some homes even have ultra-sound clothes "washers" (13). Other water-saving devices that might be found in our future home include holding tanks (22) that pre-treat sewage and store gray water to flush toilets and irrigate plants. Temperature-control faucets (15) deliver water without waste. Some of the surveyed engineers cited futuristic appliances, such as a refrigerator (14) capable of sensing chemical breakdown of foods, and flashing a time-to-toss-out alarm. The fridge can also read bar codes, and automatically e-mail a restock grocery order. Many parts of the year 2010 home are made in factories, including pre-painted exteriors (17). All furnishings, paints, wallcoverings, and drapes (20), are made of non-toxic materials that won't off-gas. And, all outside communication—telephone, computer modem, fax, 1,000-channel television—is completely wireless, delivered to a single telecommunications port (18) for distribution throughout the house. ■



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